THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—40TH YEAR SYDNEY, SATURDAY, AUGUST 29, 1953 No. 9

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— Page.

An Address, by B. S. Hanson 321
Pattern of Renal Response to Circulatory Stress, by E. G. McQueen, M.B., M.R.C.P., M.R.A.C.P., M. P. Summerfield, B.Sc., and Elinor Trewin, B.Sc. .. 323
Calorimetry: A Method of Estimating Peripheral Blood Flow, by A. J. Barnett and G. R. Wigley 326
Vaginal Delivery Following Cæsarean Section, by John Nattrass, M.B., B.S., D.G.O. 329
Serum Protein Levels in Normal Non-Pregnant and Pregnant Women, by Barbara Liddelow, B.Sc. .. 332

REPORTS OF CASES—

Acute Mechanical Intestinal Obstruction Caused by Adhesions as a Result of Retroperitoneal Hæmorrhage of Hypertensive Origin: A Report of Three Cases, by Thomas F. Rose 334
Congenital Facial Diplegia (Moebius's Syndrome), by S. E. J. Robertson, M.B., M.R.C.P., M.R.A.C.P. 335
Multiple Intussusception and Its Association with Intestinal Autonomic Dysfunction, by Richard J. Mulhearn 337

REVIEWS—

Medicine 340
Control of Communicable Diseases 340

BOOKS RECEIVED 340

LEADING ARTICLES—

The Phosphate Cycle 341

CURRENT COMMENT—

Heparin and Angina Pectoris 342
Smoker's Respiratory Syndrome 343
Renal Papillary Necrosis 344
Cortisone in the Treatment of the Shoulder-Hand Syndrome 344
New Zealand and Thyroid Disease 345
Measles Encephalomyelitis 345

ABSTRACTS FROM MEDICAL LITERATURE—

Radiology 346
Physical Therapy 347

SPECIAL ARTICLES FOR THE CLINICIAN— Page.

LXXVI. Measles (Morbilli) 348

BRITISH MEDICAL ASSOCIATION NEWS—

Annual Meeting 349
Victorian Branch News 355

OUT OF THE PAST 355

CORRESPONDENCE—

Fluorine and Dental Caries 355
The Life Insurance Medical Research Fund of Australia and New Zealand 356
Thyroidectomy Follow-up 356
Bilateral Carcinoma of the Breast 356
Urinary Excretion of Mercury in Pink Disease .. 357
Acute Infections of the Fingers and Hand 357

POST-GRADUATE WORK—

The Post-Graduate Committee in Medicine in the University of Sydney 358

NAVAL, MILITARY AND AIR FORCE—

Appointments 358

THE ROYAL AUSTRALASIAN COLLEGE OF PHYSICIANS 359

ROYAL AUSTRALASIAN COLLEGE OF SURGEONS—

Final Fellowship Examination 359

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA 359

NOTICE—

Marriage Guidance Lecture in Sydney 360

DEATHS 360

NOMINATIONS AND ELECTIONS 360

MEDICAL APPOINTMENTS 360

DIARY FOR THE MONTH 360

MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 360

EDITORIAL NOTICES 360

An Address.[1]

By B. S. HANSON,

President of the South Australian Branch of the British Medical Association.

FOR the medical man who wishes to address his colleagues on some general subject there appear to be two popular choices at the present time: one deals with the role of the medical specialist and the other with medical education. My habit is to conform, and tonight I take my place with those men who have recently spoken or written on one or other of these subjects; but for good measure I intend to deal to some extent with both.

As a medical specialist I have been uncomfortably aware that to consider the question of specialization is automatically to decry it. There are, it appears, too many special subjects and too many specialists, and all because to divide our profession in this way leads to seeing man as a disease, a system or a tissue rather than as a whole with body, mind and perhaps even a soul. Whether the creature who has forsaken medicine for a specialty should be studiously overlooked by his colleague with the wider vision, or whether he should stand on the side-lines to be consulted at less frequent—much less frequent—intervals, is a question which is often glossed over in these discussions. But what does appear with the regularity of the seasons is that the specialist necessarily has a narrow outlook and is correspondingly dangerous to the patient who goes to him.

To me, of a more mundane intellect, how unwise, or perhaps unpractical, this conclusion appears! Those who proclaim it are almost always leaders in the field of general medicine or surgery, and usually concerned with the teaching of their art. Their very position in the medical community brands them as having an intelligence superior to that of the general run of their colleagues, and to this extent they are capable of acquiring for their patients a store of knowledge greater than the average. But in practice will this greater store of learning always satisfy either them or their patients, body, mind and soul? Of course not, and the fact that they periodically consult their specialist colleagues proves this. The all-embracing knowledge of the great men at the turn of the century is not a measure of the decline of the human intellect since that time. Rather is it a measure of the immensity of medical knowledge which has been built up since then, to unify which would require the brain of a Saint Augustine, a Leonardo da Vinci or a Bacon, and such men are of an age rather than of a generation.

While admitting, then, that he has evil propensities, I claim that we need, and will continue to need, the specialist in greater numbers and of higher quality. His scope must be defined on practical grounds, and will vary with the constant change in special knowledge. To be so restricted, as the American surgeon who will operate only on the appendix, or his colleague who cannot, or will not, remove the ovarian cyst he has exposed instead of the lower-bowel

[1] Read at the annual meeting of the South Australian Branch of the British Medical Association on June 24, 1953.

tumour which is his chosen sphere, to me borders on the ridiculous. But radiology, which is perhaps old as specialties go, is already divided into therapeutic and diagnostic departments, and the diagnostic radiologist is developing skills which probably mean a subdivision here before very long. A similar change in all specialties, whether diagnostic or therapeutic, is inevitable up to an ill-defined limit which is financial rather than to do with body, mind and soul, for the time must come when the State can no longer afford the detailed care which health rather than welfare would dictate.

This limitation of medical scope is not only of academic interest, for the patient who is suitably directed may thereby shorten his period of morbidity and may even save his life by taking advantage of the more detailed knowledge thus available. Suitably directed! How simple this sounds, but in practice how difficult to achieve! For the more narrow the specialization, the more detailed is the knowledge required of the general clinician if he is to select for his patient the type of specialist most likely to give advice which will save him time, money and morbidity. Thus an efficient medical service demands not only an increase in special subjects, but what is far more difficult, a comparable increase of knowledge among general clinicians as to what these newer special subjects can offer. That very important component of the health service, the general practitioner, seems destined to carry more and heavier burdens as our knowledge of health becomes more complex.

Despite my earlier remarks about the value of specialists let me here state my opinion that the two most important groups in our profession are the general surgeons and the general practitioners. A physician interested in a special subject retains some knowledge of general medicine and so can teach medicine if called upon to do so. But only a general surgeon can teach surgery to the next generation, and therein lies his importance. The general practitioner is important because on him often devolves the responsibility for early diagnosis of serious disease, because he sets a standard of value by which the whole profession tends to be judged, but most of all because, as was recently pointed out by the Council of the World Medical Association, a sound and highly ethical general practitioner service is the greatest bulwark against socialization of the medical profession, a disaster for doctor and State alike. So long as we insist upon a good general training for all surgeons, enough of them will retain a general interest to supply teaching needs. But whether anything needs to be done to retain a solid general practitioner element and, if so, what is to be done are questions worthy of some thought.

Perhaps more than any other branch of the profession, radiologists have the opportunity of observing the clinical acumen of a wide cross-section of their fellows, and in common with my colleagues I should like to pay my tribute to the worth of our general practitioners in South Australia. In such a practice it is fatally easy to stagnate intellectually, and it is all the more to the credit of these men that so many keep abreast of constant advances in so many aspects of medical thought. After being here on a lecture tour in 1951, Professor D. M. Dunlop made a similar appraisal when he described the humility that he felt in the presence of our Australian general practitioners, the best of their kind, he said, in the world. If such an assessment is really true, as I am sure it is, have we anything to fear in this regard for the future? Life changes so quickly these days that it is difficult to be certain, but I believe that, above what may be called the normal drain from general to consulting practice, the new complexity of medicine will add its significant quota. There will be both more opportunities to specialize and perhaps a more restricted scope for the family doctor, and the ambitious members of the latter group and those with a better intellect will study for degrees or diplomas to equip them for consultant practice. In England, formerly the pattern of our medical life, the large numbers of registrars undergoing special training have been embarrassing to administrative authorities, while at the same time letter after letter has appeared in the journals complaining about the lack of attraction in general practice, not only because of its poor financial return, but also because of its lesser clinical responsibility. Our aim should be to attract to and retain in family practice a leaven of first-class men so that the average standard may be at least maintained at present levels.

Ours is an honourable profession, and it is easy enough for any of us to acquire honour. But the love of his fellow men is surely the prerogative of the family doctor and his greatest compensation for hard work and long hours. The reasons why he will forgo this compensation and forsake his family practice for a specialist life are well enough known. But perhaps they are worth one more investigation.

Firstly, the monetary reward is too low. It is true enough that the best type of doctor should not be interested in the financial side of his practice to the exclusion of all else. But at the same time he has a duty to his family and his own old age, and he should reasonably demand of the community a reward in terms of money which will take care of these duties and let him get on with his job without the worries of constant relative impoverishment. However, recent changes have improved the gross receipts in general practice, and even allowing for his 25% bad debts, the general practitioner now earns an income more nearly on a parity with his specialist colleague. Except for those who are not satisfied with less than a very complete and time-consuming examination of many of their patients, I do not believe that a low monetary return will now be the cause of a drift to specialism.

And secondly comes frustration. So much of his time is taken up with treatment of minor or imaginary illness, relieved, if the expression may be used, only occasionally by some really serious disease, that the family practitioner with his good scientific training feels that life is slipping by half wasted. His urge is to cut adrift from the type of patient with whom he deals and to take up some aspect of medicine in which all patients who come to him are really in need of his help. Although real and rather widespread, this feeling is of course quite wrong. For is not the ability to sort out the really sick from the not-so-sick the hallmark of a good general practitioner, a special skill which he develops above all his colleagues of other branches? It has been claimed that training in some special aspect of medicine, to be applied during the conduct of general practice, will mitigate this feeling. Such training might well be undertaken by the Postgraduate Committee, not necessarily up to diploma standard, and so timed that the busy general practitioner may attend the necessary lectures and demonstrations. At the same time I believe that the weekly post-graduate ward rounds should be designed to demonstrate modern methods of treatment and diagnosis rather than abstruse and rare cases more suitable for applicants for admission to the Royal Colleges. An ability to deal more confidently with his serious case may help the frustrated man to overlook the weariness of many minor ones.

Third is an inability to stand the strain, a cause with which we can have no quarrel. It is the rare young man who will recognize his limitations in this way, and usually the man who finds things gradually becoming rather much for him, or who feels that his wife's share in running the practice is draining her reserves of strength, has reached an age when he can no longer specialize. He tends, then, to drift to a salaried civil service post where he will work regular hours, and although he may not feel the same enthusiasm for his new job as he once felt for his fuller clinical life, with the decreased personal responsibility will come a lessening of mental stress. It is, then, only the occasional young man who will change to specialism on this account, and as a cause of defection from the ranks of general practice it is not important.

My last, and I believe most potent, factor is an intangible one which concerns the training of the undergraduate. Standing at the bedside of his patient in a hospital supplied with every ancillary aid, the undergraduate is inclined to notice those occasions when a provisional diagnosis is reversed more than the many when it is confirmed and, insulated as has been his short clinical life, he has not developed the charity of outlook and humility which come

from personal experience of the fallibility of even scientific man. At the same time certain of his clinical teachers adopt an attitude of superiority and condescension towards their extramural colleagues who supply the clinical material, an attitude which is certainly unspoken and probably unthinking but nevertheless real. The result is that the senior undergraduate becomes to some extent "conditioned" against general practice. Some of those with a better academic record therefore continue their academic studies. And dealing with "cases" rather than humanity, such qualified technicians take rather long to make the change to "doctors" which only experience, and experience more on the psychological than on the exact scientific side of medicine, can bring. Others enter general practice with the idea that it will be a short apprenticeship to better things, and even although they continue in this life, they tend not to get from it the satisfaction that they should, perhaps joining the frustrated group mentioned previously.

If this is true, as I believe it is, and if we should try to maintain our standard of having the best family doctors in the world in an age when specialism is so very inviting, surely there is something we should and could do about it. It is not enough that the clinical teacher should refrain from any suggestion of condescension towards the family doctor; rather should he take positive steps to remind his students of the diagnostic difficulties which often confront the general practitioner examining his patient in an unsatisfactory bed, perhaps in a poorly lit room and with anxious relatives hovering round, and to commend him when the job is well done. At the same time I believe we should adopt the principle of giving our senior students a short period of practical training in a general practice. Dr. Denis Brinton was Dean of the Faculty at Saint Mary's Hospital, London, when such training was tentatively introduced there, and while in Adelaide recently he spoke highly of the success of the venture for both student and general practitioner alike. Similar success has been reported from Sheffield. We certainly have general practitioners of the necessary quality in suburban and near-country areas, and to adopt this scheme does not add to the curriculum: it merely gives clinical training in a general practice for two or three weeks rather than in the wards and out-patient department of a big hospital. Any suggestion to add to the curriculum, already over-large, rouses adverse criticism from the Dean of the Faculty and his administrative staff, but nevertheless I feel that a lecturer in general practice should be appointed, to explain the differences between domiciliary and hospital practice and to describe a system of case-recording and book-keeping which the young graduate will inevitably need. An examination is not necessary: indeed, the subject does not lend itself readily to examination. But it would be both profitable and popular if the results of a voluntary course of such lectures at Saint Mary's could be applied in Adelaide.

It is proper that specialist training should be available in Australia, for we need the specialists and few young medical graduates can readily afford the expense of a long overseas course of training. But at the same time it must be remembered that such training in our small community may easily become narrow, and young people would be well advised to seek experience in other countries even when they cannot readily afford it, for education will thus be broader and probably a better foundation on which to build. I believe, then, that facilities for specialist training may be overdone. On the other hand, training of the general practitioner is, and must continue to be, an important function of our universities and a very great interest of our Association.

There has recently been much discussion about the unsatisfactory state of medical undergraduate teaching and suggestions as to how this may be improved. My own inclination is to agree in principle with the experts who recommend improvements, but I find it hard to agree with those of them who see little good in present methods; the quality of our graduates surely disproves this. The organization of general post-graduate teaching may be even harder than that of undergraduate training when the limited time and wide interests of the students are considered. But, however good the organization, in this as in other forms of learning the attitude of the student himself is surely the most important factor. It is a little disquieting that the weekly surgical ward rounds at the Royal Adelaide Hospital have been discontinued. Is this due to a wrong approach by the demonstrators and an unsuitable choice of patient, or is it because our metropolitan general practitioners have not stirred themselves to take an active interest in a session which could be so very useful to them?

In the two-volume life of Jerome Cardan available in our library it is recorded that the mediæval physician was given four things by his university on graduation—a hat, a ring, a closed book and an open book. The hat was of a clerical type and signified the priestly nature of the life of a physician. The ring signified that the man was married to his profession. The closed book represented the knowledge that had been gained by the physician during his undergraduate days, while the open book was a symbol of the knowledge which he should continue to acquire throughout the rest of his professional life. The gifts have regrettably been changed for a cardboard certificate, but the ideas surely have not changed since then, and it is with the open book that I am concerned at present. It is good, but not enough, that our practitioner should take it with him into every sick room, ready to read a page or a line; in a university town he should also make the time to read those pages written by his colleagues at the medical school if he is to advance in wisdom and technique at a rate that his patients deserve. And not alone will the patients benefit, for good practical post-graduate training allied to a continuing desire to learn will surely make a college of general practitioners unnecessary; the British Medical Association can well look after the political side, while prestige will be more than maintained by the high professional quality which will result.

While president of our Association I have been granted an opportunity to learn something of the trials of our general practitioners and to admire them for the difficulties they overcome. As I sink back into that medical limbo whence I came I should like once again to thank you for allowing me that opportunity, an honour and privilege which I had never expected, and one which no words of mine could ever adequately express.

PATTERN OF RENAL RESPONSE TO CIRCULATORY STRESS.

By E. G. McQUEEN, M.B., M.R.C.P. (London), M.R.A.C.P., M. P. SUMMERFIELD, B.Sc., and ELINOR TREWIN, B.Sc.,
Brisbane.

(From the Department of Medicine, University of Queensland.)

As a means of investigating the mechanism of fluid retention in congestive cardiac failure and other œdematous states, much attention has been given to the study of experimental conditions by which oliguria may be induced. Much of this work has been performed on experimental animals; but the medium of clinical research has given valuable information, particularly since the special renal clearance techniques of Homer W. Smith have been brought into use. Amongst these conditions is physical exercise. Another is acute hypotension.

Exercise and Oliguria.

That strenuous exercise in man and animals gives rise to antidiuresis is a well-known and manifestly desirable provision for "recruitment to the current accidental need . . . of such water as is in excess of that required for essential excretory work by the kidney" (Verney, 1946). The means by which this antidiuresis is brought about have been variously interpreted as diminution in renal blood flow (and consequently in glomerular filtration), and

secretion of antidiuretic hormone (ADH). There is no doubt that the former occurs, hæmodynamic readjustments diverting blood temporarily from the kidney for more urgent needs (*Barclay, Cooke, Kenney and Nutt, 1947;* Merrill and Cargill, 1948; White and Rolf, 1948). The evidence produced by Verney (1946) leaves equally little doubt as to the participation of antidiuretic hormone.

A series of clinical experiments in this department have seemed to show that in fact both phenomena occur, a fall in filtration rate taking place during the exercise and persisting for a varying time after its completion—for as long indeed as compensatory deviation may be deemed necessary—and, additionally, an antidiuresis of the posterior pituitary ADH type. The latter comes on a little less promptly, as would be expected with a hormonally mediated mechanism. If the exercise is prolonged in duration the two phenomena are superimposed, so that their separate recognition is made difficult; but if the period of exercise is brief, it is possible to recognize the two elements.

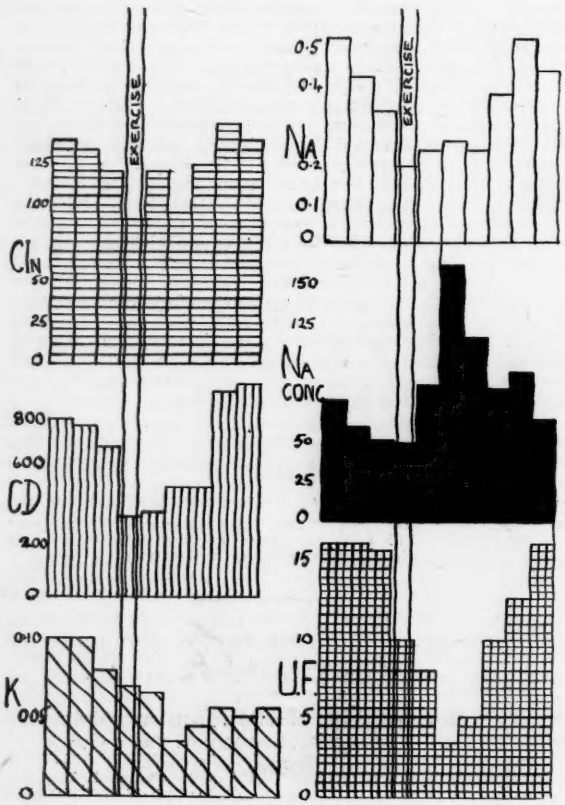

FIGURE I.

CIn, inulin clearance (millilitres per minute); CD, diodone clearance (millilitres per minute); K, urinary potassium excretion rate (milliequivalents per minute); Na, urinary sodium excretion rate (milliequivalents per minute); Na.Conc., urinary sodium concentration (milligrammes *per centum*); UF, urine flow (millilitres per minute). Clearance periods are all of approximately ten minutes.

Figure I shows the effect of exercise on inulin and "Diodrast" clearances, on sodium and potassium excretion, on sodium concentration and on urine flow in a normal subject.

The subject was a thirty-six year old male in whom diuresis was established by preliminary hydration. A high rate of fluid intake was maintained throughout. The exercise consisted in pedalling to the maximum of effort on a bicycle ergometer against resistance for a period of five minutes. Tests of clearance of inulin and "Diodrast" were performed by the method of Goldring and Chasis.

It will be seen that the moderate fall in filtration rate is accompanied by a very pronounced fall in sodium excretion and urine flow; that the sodium excretion recovers more or less simultaneously with the filtration rate; but that urine flow falls even further before recovery, at which time the urine becomes highly concentrated with regard to all its constituents. The degree to which sodium concentration is increased is shown and is the more remarkable because the rate of sodium excretion at this time is still diminished. This pattern of water and salt excretion was reproduced constantly with repetition of the experiment.

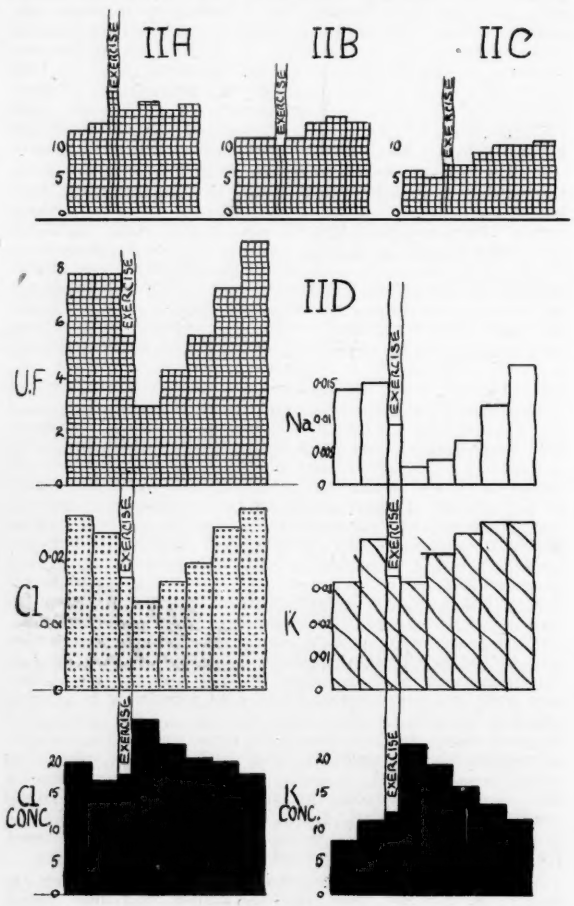

FIGURE II.

In A, B and C is shown urine flow before, during and after mild exertion, in millilitres per minute. Urine clearance periods are all of ten minutes' duration, with the exception of those during which the exercise took place, which were of five minutes' duration. In D, UF = urine flow (millilitres per minute), Cl = urinary chloride excretion rate in milliequivalents per minute, Cl.Clonc. = urinary chloride concentration in milligrammes *per centum*, Na = urinary sodium excretion rate in milliequivalents per minute, K = urinary potassium excretion rate in milliequivalents per minute, and K.Conc. = urinary potassium concentration in milligrammes *per centum*.

However, with exercise of mild degree normal subjects manifest no fall in sodium excretion or urine flow, as is illustrated by Figure IIA, which shows the urine flow in

the case of a hydrated normal subject before, during and after a bout of mild exercise consisting of stepping up and down every five seconds for five minutes onto a stool ten inches high.

Likewise a patient with heart disease but without congestive cardiac failure (Figure IIB) showed no response to exercise, and a patient with œdema resulting from hepatic disease demonstrated a continuance of the diuresis in spite of exercise (Figure IIC).

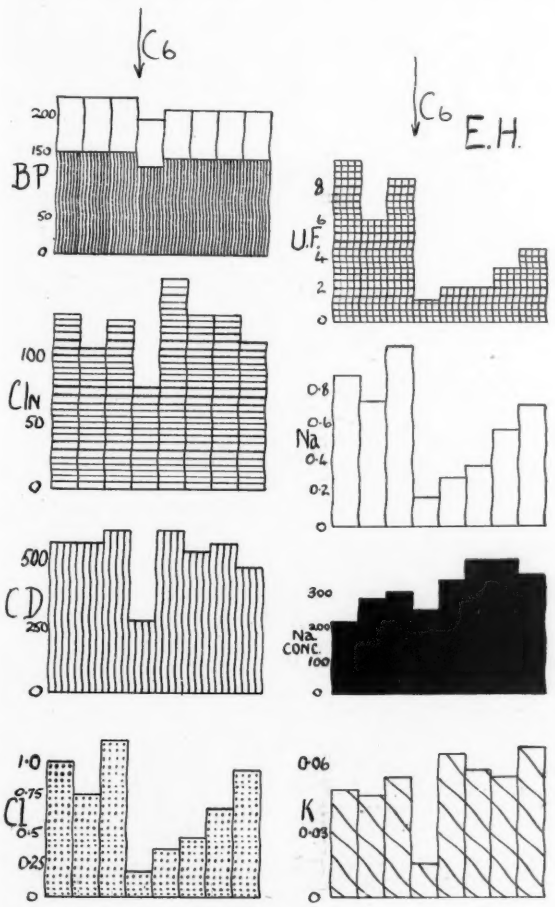

FIGURE III.

BP, blood pressure in millimetres of mercury, the diastolic pressure being shaded; CIn, inulin clearance (millilitres per minute); CD, diodone clearance (millilitres per minute); Cl, urinary chloride excretion rate in milliequivalents per minute; UF, urine flow in millilitres per minute; Na, urinary sodium excretion rate in milliequivalents per minute; Na.Conc., urinary sodium concentration (milligrammes *per centum*); K, urinary potassium excretion rate in milliequivalents per minute. Urine clearance periods are all of ten minutes.

However, a male patient, aged forty years, with ischæmic myocarditis, suffering from early congestive cardiac failure, who underwent the same type of exercise produced the same pattern of antidiuresis as followed strenuous exercise in normal subjects (Figure IID). This patient had been taking mercurial diuretics and a restricted salt diet and was excreting urine of a very low sodium content. The occurrence of a pituitary-antidiuretic hormone type of effect is shown by the increased concentration of chlorides at a time when the chloride excretion rate remained somewhat diminished, and even more noticeably by the increased urine potassium concentration, potassium excretion being yet diminished. Here, presumably, inability of the heart to increase output even to the minor degree required by this mild exercise necessitated the throwing into action of the emergency blood diversion mechanisms.

Hypotensive Oliguria.

During the course of an investigation into the effect of hexamethonium bromide on renal function (McQueen, 1952), it was noted that a profound fall in urine flow occurred. This is due initially to the fall in glomerular filtration rate accompanying the fall in blood pressure, and is paralleled by and obviously due to the fall in sodium excretion. The situation in these experiments is usually complicated by failure of complete restoration of filtration rate and prolongation of the usual gross depression of sodium excretion and urine flow resulting therefrom. However, in those cases in which the glomerular filtration rate did return to normal within the period of the experiment, the same antidiuretic effect was obvious. It is shown in Figure III, which represents the effect of 30 milligrammes of C6 given intravenously on inulin and "Diodrast" clearances, on sodium, chloride and potassium excretion, on sodium concentration and on urine flow in a thirty-six year old female hypertensive undergoing water diuresis.

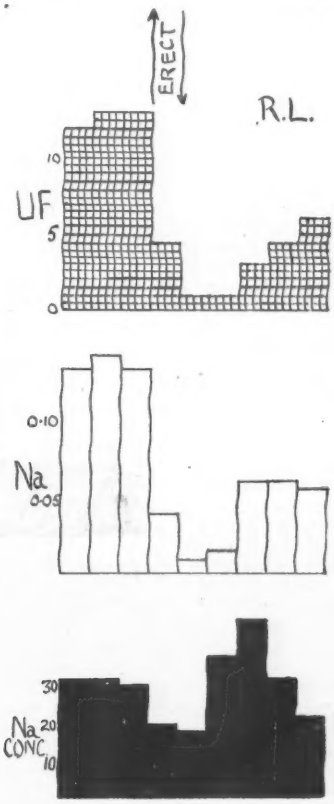

FIGURE IV.

UF, urine flow in millilitres per minute; Na, urinary sodium excretion rate (milliequivalents per minute); Na.Conc., urinary sodium concentration (milligrammes *per centum*). Urine clearance periods are all of ten minutes.

To obviate the confusion arising from persistence of fall in blood pressure, glomerular filtration rate, sodium excretion *et cetera*, several variants of this experiment were performed. Figure IV shows the effect of a transient

fall in blood pressure induced by standing up in a patient who had had an injection of C6 some time previously.

R.L., a female patient, aged forty-four years, suffering from severe hypertension and hypertensive heart disease and under parenteral treatment with C6 was given her usual morning dose (120 milligrammes). Two and a half hours later, when the resulting antidiuresis had passed off, urine collection was commenced, and after three preliminary periods she stood up for five minutes. The systolic blood pressure fell from an immediately previous figure of 190 millimetres of mercury to a minimum of 170 millimetres of mercury, recovering rapidly to and slightly above its original figure when she lay down. The diastolic pressure actually rose from 98 millimetres of mercury before to 106 millimetres of mercury after. The usual simultaneous fall in water and sodium excretion is obvious; this was shortly succeeded by a pronounced rise in sodium concentration, although sodium excretion was still incompletely restored.

A similar result was obtained in a patient in whom the fall in blood pressure was induced by the application of negative pressure to the legs.

Discussion.

As has previously been pointed out, the literature amply confirms the fall in filtration rate in normal subjects on strenuous exercise. Additionally Merrill and Cargill (1948) showed that exercise in patients with congestive cardiac failure produced an exaggerated fall in filtration rate, the renal blood flow being disproportionately decreased when the demands of the body exceeded the capacity of the damaged heart. Fall in filtration rate produces in turn a disproportionately great fall in sodium excretion, and, since the latter carries water with it to maintain isosmosis, a disproportionately pronounced degree of oliguria.

There is no doubt that this is the most important fluid retaining factor, both under experimental conditions and in disease.

However, in addition, there have been a number of reports of hormonal antidiuretic factors in oliguric conditions due to various causes. Thus there has been reported to be an increased amount of antidiuretic substance in the urine in congestive cardiac failure (Bercu *et alii*, 1950; Lowe, 1950).

Perhaps most appositely to the present discussion, it has been directly demonstrated to be concerned in the oliguria which follows syncope (Brun *et alii*, 1946).

The pattern of the oliguria in the present experiments leaves no doubt as to the operation of an antidiuretic mechanism of the posterior pituitary type, succeeding and prolonging the oliguria caused by fall in filtration rate.

The stimulus to the secretion of such hormonal antidiuretic factors is unknown. Verney considered that in his dogs emotional factors associated with the exercise were responsible for the resulting ADH secretion. It may be that emotional factors have been responsible for the ADH-type portion of the antidiuresis occurring under the varying conditions illustrated here, but it seems unlikely. The same series of events occurred regardless of the extent to which emotional stress entered the picture.

Unpublished data of our own have shown the great extent to which hepatic blood flow falls with hexamethonium-induced hypotension, and it is possible that the vasodepressor material mechanism of Chambers *et alii* (1943) may be thrown into operation. Ferritin has been shown to induce antidiuresis when injected intravenously into dogs (Baez, Mazur and Shorr, 1950).

However, ferritin is obviously not involved except under conditions of prolonged hypotension, it being necessary to maintain anoxic conditions for several hours before damage to the liver and release of vasodepressor material take place.

A neurally mediated stimulus to the posterior lobe of the pituitary would seem most probable, reflexly induced by fall in filtration rate itself or more likely by fall in renal blood flow.

Summary.

In the investigation of fluid retention in disease, the mechanism of experimentally induced acute oliguria has been studied. Two methods of inducing oliguria have been employed—exercise and hypotension. The oliguria under these circumstances is observed to conform to a pattern having two elements, the first due to a fall in glomerular filtration rate, and the second to a pituitary-ADH type of effect. Examples are shown of the pattern of oliguria after exercise and with hexamethonium-induced hypotension. The precipitation in congestive cardiac failure of the same oliguric response by minimal exercise is illustrated. It is suggested that the two elements of the oliguric pattern have a sequential relationship.

Acknowledgements.

A grant from the National Health and Medical Research Council provided the equipment necessary for this work and made possible the participation of one of us (M.P.S.). We wish to express our thanks to the nursing staff of the professorial medical unit at the Brisbane General Hospital for their assistance.

References.

BAEZ, S., MAZUR, A., and SHORR, E. (1950), "Hepato-renal Factors in Circulatory Homeostasis, Part 10—Antidiuretic Action in Hepatic Vasodepressor VDM (Ferritin)", *Am. J. Physiol.*, 142 : 198.

BARCLAY, J. A., COOKE, W. T., KENNEY, R. A., and NUTT, M. E. (1947), "The Effects of Water Diuresis and Exercise on the Volume and Composition of the Urine", *Am. J. Physiol.*, 148 : 327.

BERCU, B. A., ROKAW, S. N., and MASSIE, E. (1950), "Antidiuretic Action of the Urine of Patients in Cardiac Failure", *Circulation*, 2 : 409.

BRUN, C., KNUDSEN, E. O. E., and RAASCHON, F. (1946), "Kidney Function and Circulatory Collapse. Post-syncopal Oliguria", *J. Clin. Investigation*, 25 : 568.

CHAMBERS, R., ZWEIFACH, B. W., and LOWENSTEIN, B. E. (1943), "Circulatory Reactions of Rats Traumatized in the Nobel-Colip Drum", *Am. J. Physiol.*, 139 : 123.

GOLDRING, W., and CHASIS, H. (1944), "Hypertension and Hypertensive Disease", Commonwealth Fund.

LOWE, T. E. (1950), "A Study of Sodium and Water Balances in Congestive Cardiac Failure", M. J. AUSTRALIA, 2 : 497.

MCQUEEN, E. G., and TREWIN, E. W. (1952), "Hexamethonium Bromide and Kidney Function", M. J. AUSTRALIA, 1 : 769.

MERRILL, A. J., and CARGILL, W. H. (1948), "The Effect of Exercise on the Renal Plasma Flow and Filtration Rate of Normal and Cardiac Subjects", *J. Clin. Investigation*, 27 : 272.

VERNEY, E. G. (1946), "Absorption and Excretion of Water: The Antidiuretic Hormone", *Lancet*, 2 : 739, 781.

WHITE, H. L., and ROLF, D. (1948), "Some Effects of Exercise and of Some Other Influences on the Renal Circulation in Man", *Am. J. Physiol.*, 152 : 505.

CALORIMETRY: A METHOD OF ESTIMATING PERIPHERAL BLOOD FLOW.

By A. J. BARNETT and G. R. WIGLEY,
Melbourne.

(From the Baker Medical Research Institute and the Clinical Research Unit, Alfred Hospital, Melbourne.)

A SIMPLE method for estimating hand blood flow is of great value in clinical medicine for investigating circulatory disturbances of the upper limbs and studying the responses of the vessels to various agents. Skin temperature studies and plethysmography have been used for this purpose, but have disadvantages. The skin temperature depends on factors other than the blood flow, particularly the previous history of the part and the environmental temperature. The blood flow recorded by plethysmography varies greatly from moment to moment, so that numerous readings have to be made to obtain the average blood flow. We have found calorimetry free from these drawbacks and have used it satisfactorily as an index of hand blood flow. As the procedure has not been widely used in this country, we consider that a description of our apparatus (made from locally obtainable materials) may be of value to others wishing to use the method.

Brief Historical Survey.

If the hand (or other part) is immersed in water in a calorimeter at a temperature below that of the blood, heat is given by the blood to the calorimeter. Stewart (1911) described the relationship between the heat elimination, the blood flow and blood temperatures in the following equation: $Q = \frac{H}{T - T^1} \times \frac{1}{S}$; where Q is the quantity of blood flowing through the hand in the period of observation, H is the heat given off to the calorimeter containing the hand, T is the temperature of the arterial blood coming to the hand, T^1 is the temperature of the venous blood leaving the hand, and S is the specific heat of the blood.

This equation is valid only if thermal equilibrium is established between the skin and underlying tissues and the water in the calorimeter, so that the heat given off from the blood passes to the water in the calorimeter and is not used in heating the tissues. For this reason it is necessary to soak the hand in water at the temperature of the water in the calorimeter (see below) for a time before commencing the estimation. Even so, as the temperature of the calorimeter rises during an investigation, the temperature of the hand also rises, and strictly speaking the increase in heat content of the hand due to this cause should be added to that of the calorimeter. Stewart determined the specific heat of "a perfectly fresh hand temporarily borrowed from the body of a man accidentally killed" and found it to be about 0·7. If the specific gravity of a hand is 1·13, the water equivalent of a hand of 500 grammes would be $0·7 \times 1·13 \times 500 = 400$ grammes (approximately). This is only about one-ninth of the water equivalent of the calorimeter and contents. Also, when experiments are repeated on the same subject the water equivalent of the hand is a constant proportion of the water equivalent of the calorimeter and contents. The heat absorbed in the hand tissues may therefore be neglected without serious error. The amount of heat that passes (and as a result $T - T^1$) will depend on the temperature gradient between the blood and the water in the calorimeter. It is therefore necessary to have this gradient approximately the same in all investigations. The temperature of the blood in the hand is not accurately known, but is probably some degrees below the central blood temperature. It is necessary for the temperature of the water in the calorimeter to be at a temperature several degrees lower still. Also there should not be a great change in temperature during an investigation. (Stewart took the arterial temperature, T, to be 36·5° C., and that of the venous blood leaving the hand, T^1, to be that of the calorimeter water. He was therefore able to calculate the blood flow, Q. Most subsequent investigators have been content to record only the heat elimination, H, which they have regarded as an index of the blood flow.) Stewart analysed in great detail the precautions necessary in performing calorimetry. His apparatus had certain shortcomings due to the limited materials available at his time. The calorimeter was of polished copper, packed in granulated cork. Stirring was done by hand.

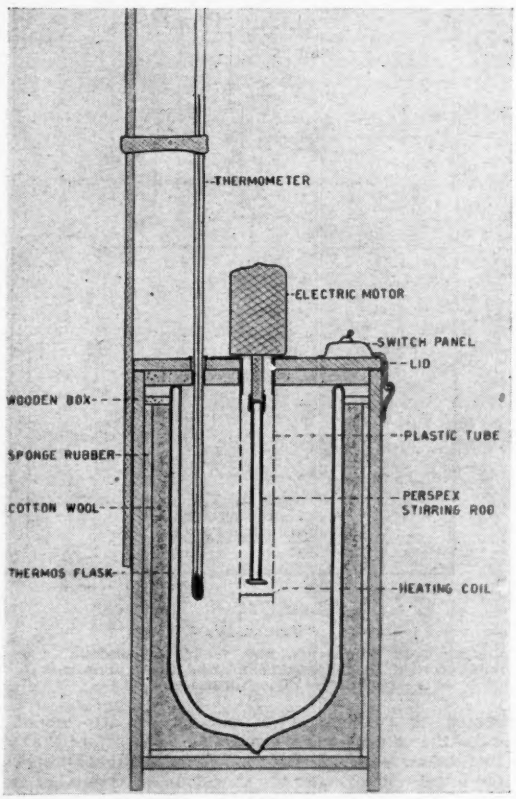

FIGURE I.

Line drawing of a schematic section of the calorimeter.

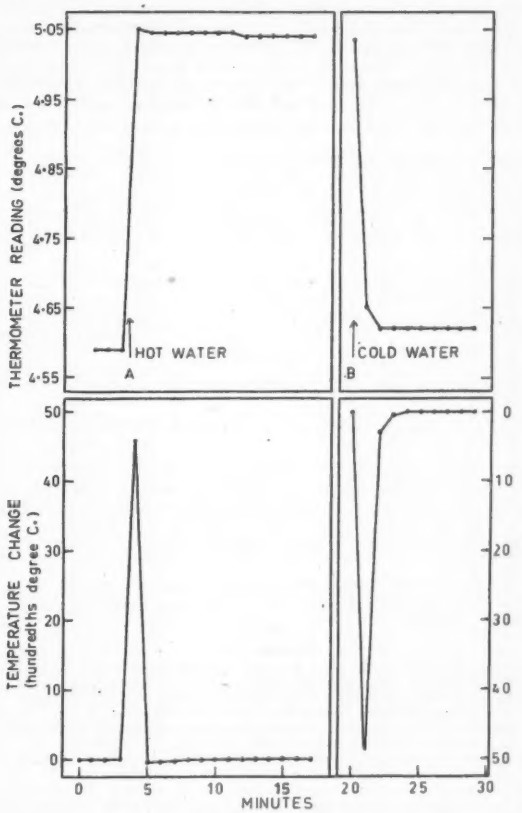

FIGURE II.

Thermometer readings (upper charts) and temperature changes (lower charts) showing the effect of the addition of hot water (A) and cold water (B) to the calorimeter. The thermometer was read at intervals of one minute to a thousandth of a degree Centigrade.

Greenfield and Scarborough (1949) modified the Stewart calorimeter. They used a vacuum flask for the calorimeter vessel. Stirring was carried out by a rotating paddle driven by an electric motor. To compensate for external heat loss, heat was fed into the calorimeter by passing a current through a coil. They found that their new

calorimeter reached equilibrium more rapidly after change of temperature than did Stewart's original model.

The performance of this improved calorimeter was investigated by Cooper and his co-workers (1949). After establishing that the heat elimination of the two hands was closely parallel with varying degrees of vasodilatation, they compared the heat elimination from one hand with the blood flow recorded plethysmographically from the other. They found that although there was great variation in the blood flows recorded plethysmographically there was a close correlation between the average blood flow and heat elimination. Thus each millilitre of blood gave up approximately four calories. They also measured the heat elimination from one hand and the skin temperature from the other during the development and subsidence of reflex vasodilatation. The skin temperature and heat elimination rose together, but, when the heat elimination decreased, the skin temperature did not fall correspondingly. These investigations showed that heat elimination as measured

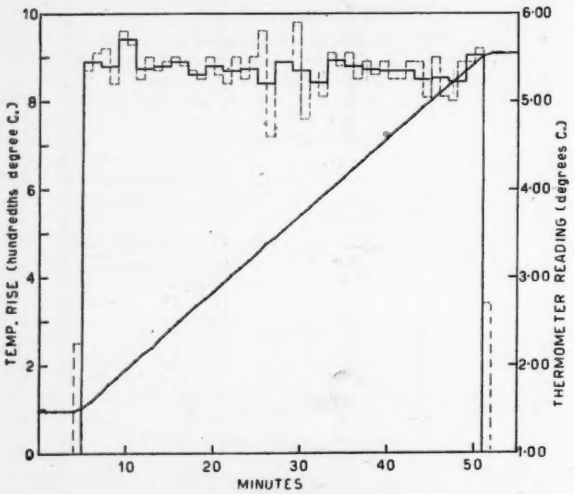

FIGURE III.

Temperature rise per minute (horizontal graph) and thermometer reading (diagonal graph) when heat was supplied at a constant rate from a steady current through a heating element. Current on at 4 minutes, off at 51 minutes. Interrupted line shows the temperature rise of calorimeter recorded for each minute. Continuous line shows temperature rise of the calorimeter per minute averaged over two-minute periods.

by calorimetry could be used as an index of blood flow, that the index was roughly quantitative, and that calorimetry was superior to skin temperature readings in following changes in blood flow.

These workers also recorded the blood flow from one hand plethysmographically with different plethysmographic temperatures. (The blood flows were adjusted according to estimations of heat elimination from the other hand in order to obviate the effect of general circulatory changes.) From an inspection of their results it would appear that change in local temperature produces little change in blood flow between 25° C. and 30° C., but that above 30° C. there is a rapid rise in blood flow with increasing temperature. It therefore seems to us that it is better to work with the initial calorimeter temperature below 30° C. This also has the advantage that there is a greater temperature gradient between the blood and water in the calorimeter, with the result that small changes in the temperature of the water have proportionately less effect on this gradient. We commence with the calorimeter temperature about 28° C. (instead of 30° C. as in Stewart's original method, and also in that used by Cooper and co-workers).

Description of Apparatus.

Our apparatus (Figure I) is essentially the same as that used by Greenfield and Scarborough with minor modifications, which we consider improvements. A gallon "Thermos" flask is packed in cotton wool in a rubber-lined box. Between the wooden lid and upper surface of the flask there is a thick sheet of sponge rubber. Holes are cut in the wooden lid and sponge rubber for the wrist, stirring rod and Beckmann-type thermometer. The stirring rod and propeller are made of "Perspex" and enclosed in a plastic tube with holes to allow the circulation of water. (The rod and "Perspex" being very poor heat conductors, heat loss is minimized.) A small six volt direct current electric motor mounted on the lid drives the stirring rod. Current may be passed through a small heating coil across the lower end of the plastic tube to compensate for heat lost from the calorimeter. The thermometer is graduated in hundredths of a degree Centigrade, and readings can be

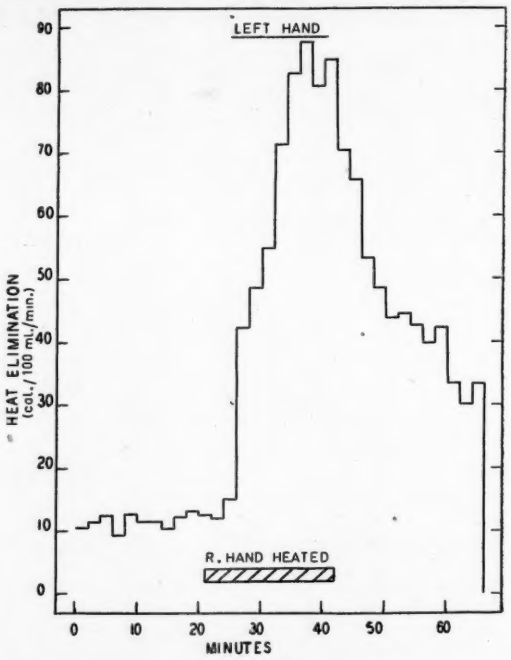

FIGURE IV.

Resting heat elimination and "reflex hyperæmia" from immersion of the opposite hand and forearm in a water bath at 44° C. Normal subject.

estimated by means of a microscope attachment in thousandths of a degree Centigrade. It is so set that zero on the scale is approximately 27° C. A small movable light on the brass rod carrying the thermometer clamp assists in reading. The current through the motor, and through the heating element, both derived from a 6 volt battery, can be varied by means of rheostats on a control panel.

Tests of Response of Calorimeter.

The water equivalent of our calorimeter has been measured and found to be approximately 150 grammes. When performing calorimetry we as a routine measure add 3500 millilitres of water to the container, so that the water equivalent of calorimeter and contents is 3650 grammes.

We determined the speed of equilibration of our calorimeter after the addition of hot and cold water. The results are shown in Figure II. They compare very favourably with those of Greenfield and Scarborough.

We determined the response of the calorimeter to the addition of a constant amount of heat produced by passing a steady current through a wire immersed in the water of the calorimeter. The results are shown in Figure III. When the heat elimination is measured over two-minute intervals it is found to be practically uniform. It is possible that the irregularities present may be due to the

heat being liberated over a small area. It would be expected that if constant heat was liberated from a large area, such as a hand, the recorded heat elimination would be even more uniform.

As a result of these tests we feel reasonably confident that our calorimeter is a suitable instrument for measuring the heat elimination from the hand. We have accepted the findings of Cooper and his co-workers in respect to the validity of using heat elimination as an index of blood flow.

Method.

The calorimeter is used in the following way:

The subject sits with his hand immersed in water at 28° C. in a bucket for thirty minutes. Meanwhile 3500 millilitres of water also at 28° C. are placed in the calorimeter. The lid

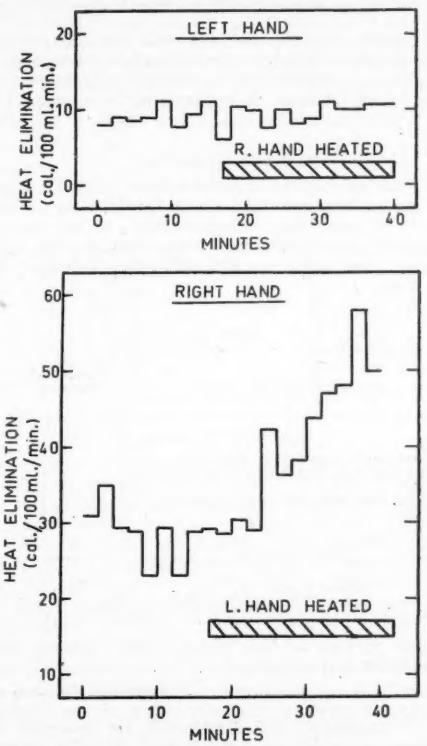

FIGURE V.

Resting heat elimination and "reflex hyperæmia" from immersion of the opposite hand and forearm in a water bath at 44° C. Patient with peripheral vascular disturbance of the left hand. (Left cervico-dorsal sympathectomy had been performed for *angina pectoris*. Later the patient developed attacks of Raynaud's phenomenon in the left hand.) Upper chart: left hand in calorimeter. Lower chart: right hand in calorimeter.

is clamped on the box, the thermometer and accessories are placed in their appropriate positions, the holes in the lid are closed with cotton wool and the circuit for the stirring motor is completed. After the motor has warmed up to a steady speed, the thermometer is read every minute, and the current through the heating coil is adjusted so that the temperature of the water does not rise or fall by more than 0·001° C. per minute. The hand is inserted through the hole in the lid of the calorimeter and immersed in water to about the level of the radial styloid process. Cotton wool is packed round the wrist where it passes through the hole in the wooden lid. After ten minutes to allow equilibrium between the skin and the water to occur, readings are commenced and continued at intervals of one minute throughout the investigation, usually a period of about half an hour. A mark is made on the wrist at the level of the upper surface of the lid. The hand is then withdrawn and the hole is plugged with cotton wool. Readings of the thermometer are continued for another five minutes to determine whether there is any heating or cooling of the calorimeter. If a temperature change of more than 0·001° C. per minute follows the removal of the hand, appropriate adjustments are made later to the temperature changes recorded during the period of immersion. The volume of hand immersed in the water of the calorimeter is measured as follows. The lid of the calorimeter is removed. The hand is replaced in the water with the mark on the wrist at a level above the top of the box equal to the thickness of the lid. A mark is made with a grease pencil on the wall of the flask at the surface of the water, the hand is withdrawn and the volume of water is added to bring the level up to this mark noted.

Heat elimination in calories per minute per 100 millilitres is given by $\frac{t \times 3650}{V}$, where t is the temperature rise per minute (in degrees Centigrade) and V is the volume of the hand in units of hundred millilitres.

Application.

We are finding calorimetry of value in the investigation of peripheral vascular disease, by determining the resting heat elimination and the ability of the vessels to dilate in response to "reflex hyperæmia" from the application of heat to another part of the body or from the action of drugs.

Resting heat elimination and the response to a "reflex" hyperæmia test in a normal person are shown in Figure III and in a subject with peripheral vascular disease of the hand in Figure IV.

Summary.

1. Brief mention has been made of the use of calorimetry by other workers.

2. A calorimeter made from materials locally available is described.

3. Tests have been described indicating that this calorimeter is satisfactory for recording heat elimination.

4. The method of performing calorimetry is outlined.

5. Calorimetry is of use in the investigation of patients suffering from peripheral vascular disease.

Acknowledgements.

Our thanks are due to Dr. T. E. Lowe, Director of the Baker Medical Research Institute and of the Clinical Research Unit of the Alfred Hospital, for encouragement and helpful advice, and to the technicians of the Baker Medical Research Institute and the Alfred Hospital for help in making the apparatus. Dr. K. McNicol helped in some of the investigations.

References.

COOPER, K. E., CROSS, K. W., GREENFIELD, A. D. M., HAMILTON, D. McK., and SCARBOROUGH, H. (1949), "A Comparison of Methods for Gauging the Blood Flow Through the Hand", *Clin. Sc.*, 8: 217.

GREENFIELD, A. D. M., and SCARBOROUGH, H. (1949), "An Improved Calorimeter for the Hand", *Clin. Sc.*, 8: 211.

STEWART, G. N. (1911), "Studies on the Circulation in Man. I. The Measurement of the Blood Flow in the Hands", *Heart*, 3: 33.

VAGINAL DELIVERY FOLLOWING CÆSAREAN SECTION.

By JOHN NATTRASS, M.B., B.S., D.G.O. (Melb.),
Melbourne.

(From the Department of Obstetrics and Gynæcology, University of Melbourne, and the Women's Hospital, Melbourne.)

IN the present communication from the Women's Hospital, Melbourne, it is intended to study the obstetrical records of 106 patients who had previously been subjected to Cæsarean section, and in whom elective repetition of this operation was, intentionally or otherwise, not performed. These cases occurred between January, 1948, and December, 1951, inclusive, and are unselected and consecutive.

TABLE I.

Year.	Total Number of Deliveries.	Elective "Repeat" Cæsarean Section.	Ruptured Uterus Prior to Intended Operation.	Previous Sections.		
				Delivered per Vaginam.	Failed Trial of Labour.	Ruptured Uterus.
1948	5364	34	—	16	1	—
1949	5539	40	—	22	2	—
1950	6234	43	1	38 (1 ruptured uterus)	4	1
1951	6360	56	—	20	2	1
Totals ..	23,497	173	1	96	9	2
		174		106		

Of these 106 cases, in 105 vaginal delivery was attempted, but in nine the attempt was unsuccessful and Cæsarean section was repeated. In one case, after normal delivery and post-partum hæmorrhage a ruptured classical scar was found at manual removal of the placenta, and subtotal hysterectomy was performed. The remaining patient, in whom labour apparently did not commence, underwent rupture of the former classical scar, and Cæsarean (subtotal) hysterectomy was carried out.

During the same period there were 173 elective "repeat" Cæsarean sections; at least one of these patients was in early labour at the time of operation. In addition one patient on whom it was intended to repeat the operation sustained overt uterine rupture prior to the date arranged.

These figures may be set out as in Table I.

The increasing popularity of trial of labour following Cæsarean section is shown by comparing these figures with some previously reported from this hospital (Hayes, 1951). Over the period from July, 1940, to December, 1947, inclusive, there were 142 "repeat" Cæsarean sections (with three maternal and four fœtal deaths), 47 successful vaginal deliveries (with no maternal deaths but four fœtal deaths), and five cases of uterine rupture (with no maternal deaths but six fœtal deaths); one of the last five patients was not in labour.

Maternal Deaths.

In the present series there were no maternal deaths in the trial of labour cases, though among the elective "repeat" operations one patient died on the operating table, having collapsed a few minutes after delivery of the child. Post-mortem examination revealed gross cardiac dilatation, thought to be due to the reduction in intraabdominal pressure, and in the absence of other findings it was assumed that death was due to this.

Number of Patients.

In the four-year period under survey, 11 patients appear twice and one appears three times; hence the 106 cases reported are derived from 93 patients.

Obstetrical History Prior to Cæsarean Section.

As the occurrence of one or more vaginal deliveries of viable babies prior to the Cæsarean section is held to be of favourable import in deciding to allow trial of labour in subsequent pregnancies, it is of interest to note the details in Table II.

Indications for Original Operation.

The indications for the original operations were as follows: preeclampsia, 15 cases; ante-partum hæmorrhage, 13 cases; disproportion, 12 cases; failed trial of labour, 10 cases; *placenta prævia*, central, nine cases, marginal, six cases; uterine inertia, three cases; eclampsia, three cases; ovarian cyst, two cases; prolapsed cord, two cases; malpresentation, two cases; rubella, two cases; toxæmia and disproportion, two cases; ante-partum hæmorrhage and disproportion, one case; pyelitis, one case; pyelitis with jaundice, one case; late vomiting with jaundice, one case; "chronic nephritis", one case; toxæmia and uterine inertia, one case; previous difficult forceps delivery, one case; face mento-posterior presentation, one case; tuberculous spine, one case; anal fistula and toxæmia, one case; "post-maturity", one case; unknown, three cases.

Type of Operation.

Of the classical type of operation there were 17 examples, at least six of them performed at the Women's Hospital. There were 36 lower segment operations (all but three from this hospital), 12 extraperitoneal operations, 23 of undetermined type and five abdominal hysterotomies of the classical type.

TABLE II.

Deliveries Prior to Section.	Number of Patients.
Nil	55
Miscarriages only (from one to six)	5
One (one including 3 miscarriages)	18
Two	7
Three (one including 1 miscarriage)	6
Four	1
Seven	1
Total	93

Only one patient in this series had a history of more than one Cæsarean section.

Her first pregnancy necessitated artificial rupture of the membranes for toxæmia, the baby dying on the second day; the second pregnancy was terminated by Cæsarean section of unknown type at six and a half months because of toxæmia, the baby dying at the age of nine hours; the third pregnancy required a further Cæsarean operation of unknown type for ante-partum hæmorrhage, the baby weighing five pounds eight ounces and apparently surviving; in the fourth pregnancy, at the Women's Hospital, pronounced toxæmia and severe accidental hæmorrhage occurred at thirty-three weeks, and a stillborn baby weighing four pounds ten ounces resulted.

Maturity at Delivery.

The bulk of the patients (76) were at or about term, 12 were more than four weeks beyond the due date (including one patient possibly six weeks and another possibly eight weeks past term), 14 had a maturity of thirty-six weeks or less, the least being thirty weeks, and in four cases there was no clue as to the exact maturity.

Onset of Labour.

In the vast majority of cases the onset of labour was spontaneous. In a few cases induction of labour for separate indications was practised.

In four cases medicinal stimulation was attempted. (At the Women's Hospital, this consists of the administration of castor oil, an enema, a hot shower and four half-hourly injections of four minims of pituitrin.) In two cases this

was unsuccessful. In both the remaining cases, one a case of premature rupture of the membranes past the due date and the other a case of mild toxæmia at term, there was a response to the first injection of pituitrin.

In 10 cases artificial rupture of the forewaters was performed. All these were successful, but three babies succumbed, one from the severe accidental hæmorrhage, the second having shown the golden vernix of Clifford, and the third from *hydrops fœtalis*.

In two cases Drew-Smythe puncture of the hindwaters was successful.

Duration of Labour.

The longest labours in the series lasted for sixty and fifty-three hours. The majority fell into the range below twelve hours. In three cases there was no clear record of duration, and in two cases labour did not occur. In the latter, one patient with premature rupture of the membranes at about eight months was treated by Cæsarean section as suffering from inertia, while the other suffered uterine rupture. The duration of labour is set out in detail in Table III.

TABLE III.

Duration in Hours.	Number of Cases.
40 and over	10
30 to 39	10
20 to 29	11
16 to 20	4
12 to 16	11
8 to 12	13
4 to 8	29
0 to 4	13

Mode of Delivery.

It is usually thought desirable to prevent prolongation of the second stage of labour by use of the obstetrical forceps, lest expulsive efforts and thinning-out of the lower segment place undue strain on the scarred uterus. However, in many cases in which the labour is progressing rapidly and satisfactorily, it is more prejudicial to both uterine scar and baby to attempt to retard delivery in order to prepare the patient for routine application of forceps than to allow normal delivery to occur under the action of the normal powers.

The modes of delivery in each of the years under review are as set out in Table IV.

The Third Stage.

There were 13 cases of primary post-partum hæmorrhage and three cases of secondary post-partum hæmorrhage.

During manual removal of the placenta or during curage or curettage, the uterine cavity was explored manually on eight occasions. The region of the scar was identifiable only twice, in one case seeming normal and in another showing a separation for three inches along its length.

A "trickle of blood" during the late second stage of labour was recorded three times. In the first case, no abnormality was found after forceps delivery, in the second the placenta showed signs of concealed accidental hæmorrhage, and in the third a laparotomy and Cæsarean section revealed an intact uterine scar.

Number of Normal Deliveries Following Cæsarean Section.

The majority of patients appear in this series having their first normal delivery since the Cæsarean operation. However, of those who appear once in the series, 12 have had one previous post-Cæsarean section delivery, four have had two deliveries and one has had three, while of those who appear twice, two have had one delivery and the one patient who had three deliveries during the present series had also had two other normal births, thereby totalling five post-Cæsarean section labours successfully completed.

The Failed Trials of Labour.

In nine cases the attempt to achieve normal delivery failed, and Cæsarean section had to be repeated.

Four of these cases followed the usual pattern, rupture of the forewaters occurring during the earlier part of the first stage of labour; vaginal examination at this time and after a further period (about four hours in each case) revealed either lack of progress or actual regression and cervical thickening.

In two of the cases the cervical canal was fully dilated, but the maximum diameter of the presenting part remained above the plane of the pelvic brim. In one case forceps were applied and a tentative effort to deliver the head was made before the Cæsarean section was begun.

In another case premature rupture of the membranes at about thirty-two weeks was observed for seventy-eight hours without labour commencing. In the interests of the baby Cæsarean section was repeated, and a child weighing three pounds 13·5 ounces was delivered.

TABLE IV.

Year.	Number of Cases.	Normal Delivery.	Forceps Deliveries.		"Abnormal Delivery."
			Prophylactic.	Therapeutic.	
1948	17	10	4	2	1 Cæsarean section.
1949	24	19	1	2	2 Cæsarean sections.
1950	42	18 (1 ruptured uterus)	14	3	4 Cæsarean sections. 1 Hysterectomy. 3 Breech deliveries.
1951	23	8	9	3	2 Cæsarean sections. 1 Hysterectomy.
Totals	106	55	28	10	9 Cæsarean sections. 2 Hysterectomies. 3 Breech deliveries.

One labour continued for thirty-eight hours with contractions of good quality, though at the end of this time there was no dilatation of the cervical canal. Even though the membranes remained intact, it was considered advisable to repeat the operation at this point.

The remaining case has been described above.

The Ruptured Uteri.

The following two case summaries describe the occurrence of uterine rupture in subsequent pregnancies after classical Cæsarean sections performed in each case because of *placenta prævia*. In one the normal delivery of a living child was completed before the rupture became apparent; in the other rupture occurred spontaneously prior to the onset of labour.

Eleanor C., aged thirty-three years, had her first pregnancy terminated by the normal delivery of a baby weighing eight pounds eight ounces. The second pregnancy was complicated by marginal *placenta prævia* and accidental hæmorrhage. Stillborn twins were delivered by classical Cæsarean section. The puerperium was normal. In the third pregnancy, spontaneous labour at forty-one weeks resulted after three and a half hours in the normal delivery of a living baby weighing seven pounds two and a half ounces. The membranes ruptured half an hour before delivery. Post-partum hæmorrhage (20 ounces) occurred, followed by a slow trickle of blood *per vaginam*. Manual removal of the placenta was undertaken, and it was found that the old Cæsarean scar had separated for about three inches. Subtotal hysterectomy was performed. Hæmoperitoneum was present. The subsequent course was satisfactory.

The first two pregnancies of Elsie C., aged thirty-two years, ended in normal deliveries. The birth weights of the babies were six pounds 12 ounces and five pounds 14 ounces respectively. At one of these deliveries a third-degree perineal tear was sustained. In the third pregnancy, classical Cæsarean section for central *placenta prævia* was performed at seven and a half months, the baby weighing four pounds nine ounces. The puerperium was morbid on three occasions, owing to endometrial infection with *Bacillus coli communis*.

In the fourth pregnancy, the patient was admitted to hospital four weeks before term with pyelitis. On the fifth day she complained of sudden generalized lower abdominal pain. On examination of the patient she was pale and sweating, and tenseness and tenderness of the abdomen and blueness of the umbilicus were present; the pulse rate was 120 per minute and the systolic blood pressure was 100 millimetres of mercury. The fœtal heart sounds were absent. Transfusion with five pints of blood was commenced and Cæsarean subtotal hysterectomy under local anæsthesia was performed. The entire scar was found to be split and bleeding. The subsequent course was satisfactory.

The history of the one case in which uterine rupture preceded the intended "elective" repetition of the Cæsarean section is appended in this section for comparison.

TABLE V.

Weight Range. (Pounds.)	Number of Babies.
10 and over	4
9 to 10	13
8 to 9	27
7 to 8	32
6 to 7	17
5 to 6	6
4 to 5	3
3 to 4	2

The first three pregnancies of Mary R., aged forty years, resulted in normal deliveries. The heaviest baby weighed nine pounds 10·5 ounces. The second and third babies died after ante-partum hæmorrhage. In the fourth pregnancy, classical Cæsarean section was performed for marginal *placenta prævia*. The puerperium was normal. The patient had also had three miscarriages. In the fifth pregnancy, in view of the site of the uterine scar and an unstable presentation, it was intended to repeat the operation electively. However, three weeks before term the patient presented complaining of sudden pain in the right iliac fossa which had spread over the abdomen. On examination of the patient there were found extreme pallor, froth at the lips, a "thready" pulse and rigidity and tenderness of the lower part of the abdomen. Morphine and a transfusion of three pints of blood were given, after which the systolic blood pressure was found to be 90 millimetres of mercury. Cæsarean subtotal hysterectomy was performed, revealing rupture of the scar and hæmoperitoneum, and a stillborn baby weighing eight pounds eight ounces was delivered. The subsequent course was satisfactory.

Birth Weights of Babies.

The heaviest babies in the series weighed 10 pounds six and a half ounces, 10 pounds four ounces and 10 pounds one ounce respectively. The smallest weighed three pounds nine and a half ounces (this baby died, after premature labour, and no post-mortem examination was possible), and three pounds 13·5 ounces. There was no record of weights in two cases. The weights are set out in Table V.

Fœtal Mortality and Morbidity.

There were six stillborn babies in the series (5·7%). The conditions associated with these stillbirths are set out in Table VI.

There were two neo-natal deaths (1·9%); one baby showed the golden vernix of fœtal hypoxæmia, together with duodenal atresia, partial atelectasis and inhalation pneumonia; the other was the premature baby weighing three pounds nine and a half ounces (*vide supra*).

One baby had a partial harelip and another showed mongolism. One developed pneumonia on the sixth day, but recovered. There were six other babies weighing less than five pounds nine ounces, all of whom survived satisfactorily.

The time-honoured aphorism is "once a Cæsar, always a Cæsar". Some believe that this remains true, even today, with about universal adoption of the lower uterine segment technique.

It is apparent that the majority of patients are capable of giving birth to one or more babies *per vias naturales* subsequent to a Cæsarean section, whatever the original indication, type of operation or post-operative course. The perversity of fate will still ordain that some patients in whom all the circumstances appear impeccable shall undergo uterine rupture even before labour begins.

However, to secure the greatest safety for both mother and fœtus in departing from the old aphorism, it is preferable that the cases chosen for an attempt at vaginal delivery should conform to the following specifications: (i) The indication for the operation should have been of a transient type, such as *placenta prævia* or prolapse of the umbilical cord. (ii) The operation should have been of the lower uterine segment type. (iii) The operation and the details of technique should be known. (iv) The puerperium should have been free from hæmorrhage or infection of the birth canal or of the abdominal wound. When such a patient is nearing the end of a subsequent pregnancy, it is necessary to arrange to conduct the labour in a hospital equipped to handle any emergency, operative or resuscitative, and to effect delivery with obstetrical forceps at the appropriate stage if necessary.

TABLE VI.
Stillborn Babies.

Associated Conditions.	Number of Cases.
Ruptured uterus	2
Accidental hæmorrhage	1
Hydrops fœtalis	1
Maceration with exomphalos and *ectopia vesicæ*	1
Cerebral hæmorrhage following breech delivery	1

Acknowledgements.

It is desired to thank Dr. W. Ivon Hayes for permission to include his earlier series, and the Medical Superintendent for permission to have access to hospital records.

Reference.

HAYES, W. I. (1951), "Vaginal Delivery after Previous Cæsarean Section", M. J. AUSTRALIA, 2:82.

SERUM PROTEIN LEVELS IN NORMAL NON-PREGNANT AND PREGNANT WOMEN.

By BARBARA LIDDELOW, B.Sc.,
The Department of Pathology, The Women's Hospital, Melbourne.

SINCE the serum protein concentration may be low in women with toxæmia of pregnancy and with *hyperemesis gravidarum*, such estimations are frequently requested in midwifery hospitals. It has been found that even in normal pregnancy the serum protein level is not constant, and therefore a standard series of normal values throughout pregnancy is essential for a basis of comparison. Plass and Matthew (1926) have published a comprehensive series of these values, having estimated concentrations of total protein, albumin and globulin in plasma of normal pregnant women throughout pregnancy. Their figures have been used as the standard of normality in these laboratories for many years. In some instances we have found that the concentration of protein in apparently normal women was unexpectedly low when compared with these series, and it was decided that it would be more satisfactory to have a series of normal values obtained from the hospital's own patients. These patients would live under similar conditions to those being tested, and their diet, which is influenced by food habits of the community, income and climate, would be more comparable.

Experimental Investigation.

Serum protein estimations were made in each month of pregnancy, on about 20 normal women, chosen from the Women's Hospital Ante-Natal Clinic. Estimations were also made on serum from 23 normal non-pregnant women of child-bearing age who had volunteered as blood donors, all of whom are required to be above a minimum weight and to have a normal hæmoglobin concentration.

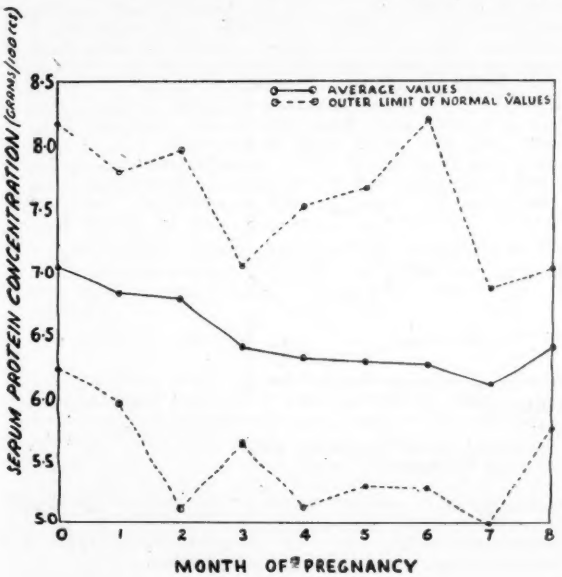

FIGURE I.

Average, maximum and minimum values for normal serum protein concentration throughout pregnancy.

All samples were assayed by the Kjeldahl method as used as a routine procedure in these laboratories, one millilitre of serum being digested by 15 millilitres of concentrated sulphuric acid, with five grammes of potassium sulphate to raise the boiling point, and a few milligrammes of copper gauze being used as a catalyst. The distillation of the digested mixture is carried out in the usual manner. Following the publication of Chibnall, Rees and Williams (1943), in which it was shown that the digestion period is rarely long enough in routine work, a series of tests in which different periods of digestion were used led to the conclusion that three hours' digestion was necessary to obtain a result of reasonable accuracy (Liddelow, 1949). In these investigations this three-hour digestion period was consequently used for all estimations of protein by the Kjeldahl method.

Results.

The results are listed in Table I, and the average, maximum and minimum values for non-pregnant women, and for women in each month of pregnancy, are also shown in Figure I. A slow decline of serum protein concentration is evident throughout pregnancy until the last month, when an increase is observed.

In Figure II, the normal average figures of both this series and that of Plass and Matthew have been graphed. The former includes monthly estimations on not less than 20 patients for each month of pregnancy, and the latter four-weekly estimations with not less than 15 estimations for each period, so that the two series are numerically comparable.

Plass and Matthew's total protein concentrations were estimated from plasma, and, although they published no figures for total serum protein concentrations, they estimated the albumin and globulin content on each sample tested. To compare our figures, we calculated the serum protein concentration by addition of these albumin and globulin figures, and the result is also shown in Figure II.

Discussion.

The average serum protein concentration of normal non-pregnant women was of the same order in both our series and that of Plass and Matthew, but it was interesting to note that the average values obtained from our normal pregnant patients were less than 6·5 grammes of protein per 100 millilitres of serum in the last seven months of pregnancy. These results were lower than those of Plass and Matthew, the greatest divergence occurring at the fifth to sixth month of pregnancy, when the results were 6·30 and 6·70 grammes per 100 millilitres of serum respectively. Without more data, no reason for this difference in values in normal pregnant women between the two series can be advanced. A probable explanation could be the difference in environment and diet between the two countries, and a variation in diet habits over the period of twenty years since Plass and Matthew's publication.

TABLE I.

Serum Protein Values for Normal Pregnant and Non-Pregnant Women.

Subjects.	Average Value. (Grammes per 100 Mils.)	Range of Values. (Grammes per 100 Mils.)	Number of Cases.
Pregnant women: Months pregnant:			
1 to 2	6·81	5·96 to 7·79	21
2 to 3 ..	6·78	5·11 to 7·96	25
3 to 4	6·40	5·64 to 7·05	21
4 to 5	6·32	5·12 to 7·51	20
5 to 6	6·30	5·29 to 7·66	20
6 to 7	6·27 (8·19)	5·26 to 7·00	25
7 to 8	6·10	4·97 to 6·86	20
8 to 9	6·39	5·75 to 7·03	20
Normal non-pregnant women	7·04	6·24 to 8·16	23

In Figure II, a gradual decrease of serum protein concentration after the first two months of pregnancy is seen in both series of results. This has been noticed by other workers, and is stated by Dieckmann (1952) to be due to hæmodilution which occurs during pregnancy, when fluid is gained in the blood-stream so that the blood volume is increased, and the concentration of the circulating protein is therefore altered, even though the total circulating protein may remain constant. In both series a rise in serum protein concentration is noticed in the last four weeks of pregnancy, but the level is not restored to that of the first two months.

Another point of interest noted in Figure I and Figure II is the wide range between minimum and maximum values for each month, which reaches as much as two grammes of protein per 100 millilitres of serum. This emphasizes the fact that a serum protein concentration must be considerably lower than the average normal figure before any clinical importance can be attached to it.

Summary.

1. The maximum, minimum, and average serum protein values are reported for 23 normal non-pregnant women, and for at least 20 women in each month of pregnancy.

2. The results obtained were consistently lower than those reported by Plass and Matthew in 1926.

3. These results confirm the observation of Plass and Matthew that there is a slow decline in serum protein concentration throughout pregnancy until the last month, when a slight rise occurs.

4. Maximum and minimum protein values in normal pregnant women may show a divergence of up to two

grammes of protein per 100 millilitres of serum at any given stage of pregnancy.

Acknowledgements.

I wish to thank Dr. Vera I. Krieger for advice given during the work on this paper, and also Dr. Rachel Jakobowicz, of the Melbourne Red Cross Blood Transfusion Service (Victorian Division), for kindly sending specimens of blood from 20 female blood donors.

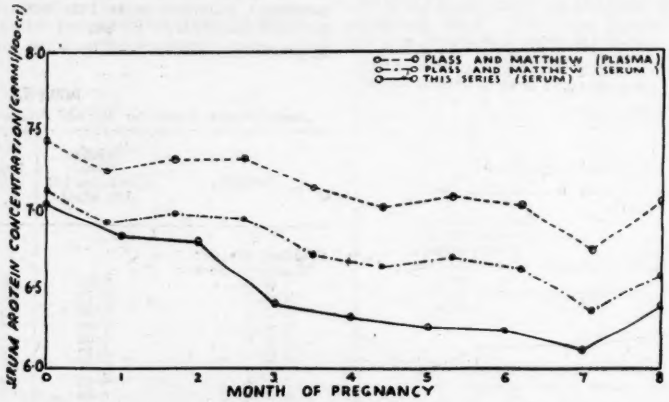

FIGURE II.
Comparison of serum protein values throughout normal pregnancy with those obtained by Plass and Matthew.

References.

CHIBNALL, A. C., REES, M. W., and WILLIAMS, E. F. (1943), "The Total Nitrogen Content of Egg Albumin and Other Proteins", *Biochem. J.*, 37: 354.

DIECKMANN, W. J. (1952), "The Toxæmias of Pregnancy", Mosby, St. Louis.

LIDDELOW, B. (1949), Unpublished work.

PLASS, E. D., and MATTHEW, C. W. (1926), "Plasma Protein Fractions in Normal Pregnancy, Labor, and Puerperium", *Am. J. Obst. & Gynec.*, 12: 346.

Reports of Cases.

ACUTE MECHANICAL INTESTINAL OBSTRUCTION CAUSED BY ADHESIONS AS A RESULT OF RETROPERITONEAL HÆMORRHAGE OF HYPERTENSIVE ORIGIN: A REPORT OF THREE CASES.

By THOMAS F. ROSE,

Consulting Surgeon, Hornsby District Hospital; Honorary Assistant Surgeon, the Royal North Shore Hospital of Sydney; Relieving Surgeon, Department of Repatriation, Sydney; Tutor in Surgery, University of Sydney, Sydney.

(From the Department of Surgery and the Unit of Clinical Investigation, the Royal North Shore Hospital of Sydney.)

RETROPERITONEAL HÆMORRHAGE is a well-known cause of abdominal symptoms which may mimic an acute surgical emergency.

The rupture of a dissecting aneurysm of the abdominal aorta resembles a severe abdominal catastrophe, with the onset of agonizing pain amenable to no known analgesia. Death is always inevitable, and the surgeon is fortunate in equivocal cases if it occurs before the patient reaches the operating theatre.

Subcutaneous trauma to the abdomen by an accident, such as a run-over injury or injury with a blunt instrument, may cause a retroperitoneal hæmorrhage. This may be followed by paralytic ileus, a neurogenic obstruction due to interference with the great nerve plexuses.

The three cases reported here belonged to neither of the above-mentioned categories. Each patient had hypertension and arteriosclerosis and suffered retroperitoneal hæmorrhage of lesser degree from the rupture of small unidentified vessels following a sudden act acutely raising the blood pressure. In each instance the inflammatory response to the hæmorrhage caused a loop of small bowel to become adherent to it, so that a mechanical obstruction ensued. This lesion was attended by a characteristic train of symptoms—firstly, that due to the hæmorrhage, and secondly, that due to the later obstruction.

Case 1.

The patient was a male, aged sixty-eight years, who was known to have arteriosclerosis with symptomless hypertension, the systolic blood pressure being always over 200 millimetres of mercury and the diastolic pressure 110. At the age of forty-eight years the patient had a duodenal ulcer which did not respond to medical measures. The ulcer was excised and a gastro-enterostomy performed, with complete relief of symptoms.

Eighteen hours prior to his admission to hospital, whilst helping to lift a heavy box, he was seized with sudden severe epigastric pain which made him collapse and vomit. This pain was very constant and quickly radiated all over the abdomen and posteriorly to both shoulder blades. It lasted for twelve hours and then its intensity gradually lessened. Three hours later the patient began to experience attacks of colicky epigastric pain relieved by the projectile vomiting of bile-coloured fluid. These pains were becoming more severe, as was the vomiting, and he noticed that his abdomen was becoming distended. His bowels had been confined since the commencement of his illness. There were no other symptoms at all.

Examination of the patient on his admission to hospital showed him to be a sick-looking elderly man who was very dehydrated. His tongue was dry and furred, his temperature was 98° F. and his respirations numbered 25 per minute. Inspection of the abdomen showed the upper right paramedian scar of his previous operation. There was upper abdominal distension and the abdomen did not move on respiration. Generalized tenderness and rigidity were present. The percussion note was resonant all over the abdomen. A rectal examination disclosed no abnormality. Examination of the cardio-vascular system revealed an enlarged heart, which had an accentuated second aortic sound. The heart rate was 120 per minute, the beat being regular in amplitude and rhythm. The palpable arteries were tortuous and thickened. The systolic blood pressure was 180 millimetres of mercury and the diastolic 90 millimetres. (These figures later rose to 240 and 120 millimetres

of mercury respectively during his convalescence.) Examination of the patient's urine revealed a few red blood cells and a trace of albumin. All the other systems were normal. Whilst he was being examined the patient was seized with colicky pain, which ceased on the vomiting of copious amounts of bile-coloured fluid.

As soon as fluid and electrolytic balance had been restored by venoclysis and the stomach emptied by a tube-suction apparatus operation was performed. The abdomen was entered through the previous incision. A large, widespread retroperitoneal hæmorrhage was found, to which was firmly adherent an upper loop of jejunum. This was kinked by plastic adhesions. Above it the jejunum was hugely dilated, whereas below it the bowel was in a state of collapse. This obstructed jejunal loop led up to the efferent loop of an old posterior gastro-enterostomy. The stomach itself was also dilated with fluid (even though it had a tube in it). The afferent loop, which was also dilated, led back to the duodenum, whose first part was scarred and stenotic from a healed ulcer. The hæmorrhage was not touched. The adherent loop of bowel was mobilized by blunt dissection and the obstruction overcome.

Convalescence was uneventful. The patient lived three years without further abdominal symptoms and then died of a cerebral hæmorrhage. Unfortunately no autopsy was permitted.

Case II.

A summary only of Case II will be given, since this case has been reported in this journal as Case IV in an article entitled "Multiple Diverticulosis of the Jejunum and Ileum" (Rose, 1953).

The patient was a male, aged seventy-nine years, who had arteriosclerosis with hypertension. After a fit of coughing he developed sudden, severe and continuous pain over the right side of the abdomen; this was succeeded by colicky abdominal pain. Other signs and symptoms and the results of investigations led to the making of a diagnosis of large bowel obstruction, and operation was performed. It was found that the original pain had been due to a hæmorrhage into the gastro-colic omentum, owing to rupture of a blood vessel from the coughing. The subsequent inflammation had caused the terminal portion of the ileum to become adherent to it by fibrinous adhesions. The ileal loop had then become twisted into a volvulus, with complete obstruction. The terminal part of the ileum was untwisted and mobilized from the adhesions, and the obstruction was overcome. Convalescence was uneventful and eighteen months later the patient had had no further symptoms.

Case III.

The patient was a female, aged sixty-five years, who had hypertension, the systolic blood pressure varying from 180 to 200 millimetres of mercury and the diastolic from 90 to 100 millimetres. This had resulted in a coronary occlusion, which was followed by auricular fibrillation. This had been treated by digoxin, which, however, made the patient vomit incessantly for the following four days. She was then seized with sudden, severe, constant pain in the right iliac fossa, which lasted twenty-four hours; it lessened over the next twelve hours. It was then succeeded by generalized colicky pains, which lasted for the next six hours prior to her admission to hospital. During this time the patient was completely constipated.

Examination of the patient on her admission to hospital showed her to be a sick-looking woman who had a systolic blood pressure of 220 millimetres of mercury and a diastolic pressure of 120 millimetres. Her heart was enlarged and was slowly fibrillating, the rate being 90 per minute. The respiratory rate was normal, as was the temperature. The tongue was furred. There was generalized abdominal distension. Palpation revealed a tender mass in the right iliac fossa, which did not move on respiration. There was rigidity all over the right side of the abdomen. The percussion note was resonant all over the abdomen. Many borborygmi were audible.

The abdomen was explored through a paramedian, paraumbilical incision. A large retrocaecal and retrocolic hæmatoma was found. The inflammatory reaction from this had formed adhesions to the terminal portion of the ileum, which was kinked. Above this the bowel was dilated, whereas below it was deflated. The adhesions were divided and the bowel was mobilized so that the obstruction was overcome. The hæmatoma was evacuated and a drainage tube inserted into the resultant cavity.

Convalescence was uneventful, the drainage ceasing in two weeks. However, one month later a further coronary occlusion occurred and the patient died. Unfortunately no autopsy was permitted.

Discussion.

These three patients had many points in common. All were elderly patients who had arteriosclerosis and hypertension. The illness of each commenced with an act causing a sudden rise of pressure which ruptured the diseased vessel. This was the lifting of a heavy object in Case I, coughing in Case II, and vomiting in Case III. Each patient developed a retroperitoneal hæmorrhage, an extravasation in Cases I and II, and a hæmatoma in Case III. The inflammatory reaction to these hæmorrhages succeeded in catching a loop of bowel, which caused an obstruction in each instance. This was a high jejunal obstruction in Case I and a low ileal obstruction in the others. In Case II a volvulus of a loop was caused, whereas in the others the loop was kinked.

The symptomatology mirrored the pathology. There was, first, the severe constant pain of the hæmorrhage followed by the colicky pain due to the obstruction. The physical signs were the sum of those due to the hæmorrhage and those due to the obstruction.

The pre-operative diagnosis was that of an obstruction, and it was only at laparotomy that the cause was discovered. Case III was diagnosed as an appendiceal abscess with small bowel obstruction, until it was realized that the vomiting occurred before and not after the pain.

Treatment was directed towards the obstruction. The hæmorrhage required no treatment except in Case III, in which a hæmatoma was present and able to be evacuated.

The prognosis for these patients is that of their general condition. These hæmorrhages were not spontaneous and it seems reasonable to assume that, provided the acts causing them are not repeated, then they should not recur.

Summary.

Three patients with mechanical intestinal obstruction due to adhesions forming as a result of retroperitoneal hæmorrhage are discussed. These hæmorrhages were caused by the sudden rise of an already high blood pressure in small vessels presumably damaged by arteriosclerosis.

Reference.

ROSE, T. F. (1953), "Multiple Diverticulosis of the Jejunum and Ileum", M. J. AUSTRALIA, 1: 737.

CONGENITAL FACIAL DIPLEGIA (MOEBIUS'S SYNDROME).

By S. E. J. ROBERTSON, M.B., M.R.C.P. (London), M.R.A.C.P.,
Honorary Assistant Physician, Royal Alexandra Hospital for Children, Sydney.

MOEBIUS'S SYNDROME has never been reported in the literature of this country and is of sufficient rarity and clinical interest to be recorded here.

Clinical Record.

J.N., a female patient, aged four years, was born after the normal period of gestation and the confinement was uneventful. The mother was perfectly healthy during this, her second pregnancy, and she suffered from no illnesses

or accidents of any kind. Investigation of the family history reveals no examples of congenital abnormalities.

Soon after birth the patient was noticed to have difficulty in sucking, and after semi-solid foods were introduced to her diet she used to use her finger to move food from the sides to the centre of her mouth. Although she can make chewing movements, she cannot eat any food unless it is thoroughly mashed. Since birth, little movement of the face has occurred on crying and laughing, this being more noticeable on the left side. She has always slept with her left eye partly open. It is also noticeable that no tears come from her left eye when she cries. Her tongue has always been small and, although she has a great deal to say, her speech is unintelligible to anyone outside her immediate family. She can see and hear well, and has no difficulty in smelling. She has never regurgitated fluids through her nose or had any difficulty in swallowing, and the tone and pitch of her voice and cry have never been thought abnormal. She sat unsupported, walked alone and became continent of urine and fæces at the usual times and has no difficulty in using her arms and legs.

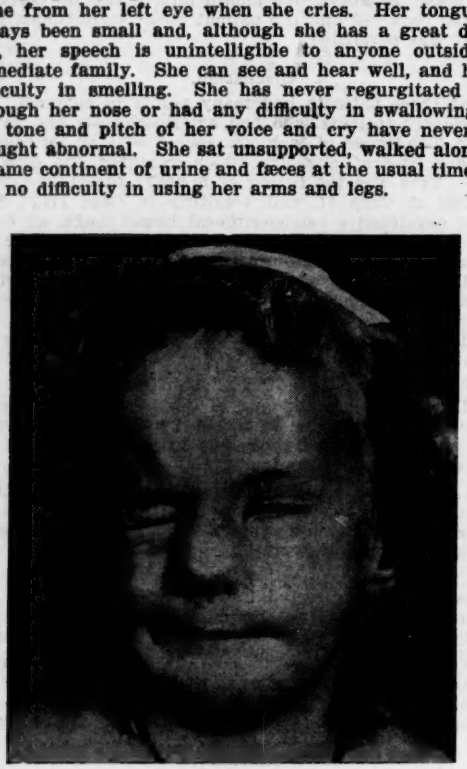

FIGURE I.

The patient is endeavouring to shut both eyes tightly. This illustrates complete paralysis on the left side of the face and weakness on the right.

On examination of the patient, her pupils reacted to light and accommodation and convergence was normal. No abnormality could be detected in her fundi. Upward, downward and medial movements of her eyes were full, but she was unable to move either eye laterally. She was able to close her jaws but not against slight resistance, and she did not seem to be able to make lateral movements of her lower jaw. No disturbance of sensation was found in the skin of her face. Facial expression was absent. Slight movement of the right frontalis muscle could be observed when she looked upwards. She could just close her right eye, but not her left. When she was asked to show her teeth, there was slight movement of the right corner of her mouth. Elevation of the palate was full and equal on both sides and on phonation, and there was no deviation of the uvula. Her tongue was small and atrophic, the atrophy being more pronounced on the right side. It could be protruded only a short distance over the teeth and deviated slightly to the right side of the mid-line. No fibrillary movements were seen. When the ears were syringed with hot and cold fluids, no nystagmus was observed. Examination of the remainder of the body revealed no muscular wasting or fibrillary movements, no alteration of muscle tone, no loss of muscle power and no alteration from the normal of superficial or deep reflexes. No congenital abnormalities of the limbs or other organs could be found. Her speech was difficult to understand, as she could not pronounce certain labial consonants. Her intelligence seemed normal as judged from her performance at play and on carrying out small tasks. Her parents, who could interpret her speech, were sure that her vocabulary was as large as that of other children of her age.

Discussion.

This syndrome consists of weakness or paralysis of muscles innervated by the facial and one or more cranial nerves, often combined with other congenital malformations. Henderson (1930) analysed the literature and found reports of 60 cases, to which he added one of his own. He found that the facial paralysis was complete in one-third of these and in another third it was complete for the upper part of the face. It was unusual for any part of the face to be completely unaffected, but the muscles least involved were those which draw the corners of the mouth downwards and outwards. In only ten cases was the facial

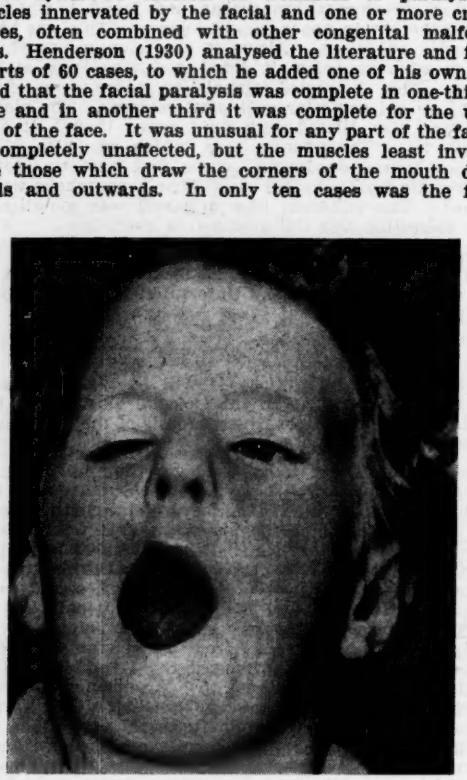

FIGURE II.

The tongue is here protruded to its fullest extent. The atrophic condition of the tongue is shown.

paralysis uncomplicated by other cranial nerve palsies, and in none of these ten was it associated with congenital malformations of the rest of the body. It is possible that uncomplicated facial palsy may have a different ætiology. Abducens paralysis is a common accompaniment, having been found in 45 patients, and this was nearly always bilateral. Complete external ophthalmoplegia was present in 15 and ptosis occasionally. Lingual palsy was found in 18 and trigeminal palsy in four. Danis (1945) found 21 cases in the literature not cited by Henderson. He observed that hypoglossal paralysis almost never occurs unless the facial paralysis is also accompanied by abducens paralysis. He found that paralysis of the vagus group of nerves had never been recorded.

Of the congenital malformations associated with these cranial nerve defects, club foot is the most common, while unilateral hypoplasia of the *pectoralis major* and malformations of the arms and hands are also seen.

The ætiology is unknown. There does not seem to be any inherited tendency to develop such defects. No "noxious influence" which may possibly have damaged the developing fœtus has ever been reported. Bonnevie (1934) examined a strain of mice which had congenital defects of cranial nerves at various stages of development. She held

that the causative neurological defects were due to pressure of abnormal collections of cerebro-spinal fluid. This work has never been confirmed.

Very few post-mortem examinations of the central nervous system in this syndrome have been reported. In the three cases cited by Henderson (1939) in which this was done, the nuclei of the affected nerves were unidentifiable or contained a diminished number of ganglion cells. The nerves arising from these nuclei were correspondingly underdeveloped and the muscles innervated were atrophic. Hypoplasia of other portions of the brain was described affecting the medulla, the pyramids, the medial longitudinal bundles, the interstitial tissue of the *formatio reticularis* and the olives.

The patient described above has bilateral facial, abducens, hypoglossal and trigeminal palsy, and her condition fits into the syndrome very well. The absence of tears was mentioned by Henderson (1939) and is a rare finding. Caloric stimulation of the labyrinth did not cause the normal response and suggests that the medial longitudinal bundle is involved.

The condition is not progressive, and operative treatment of the squint has never produced lateral movements of the eyeballs. The main difficulty is that of speech, which is usually unintelligible to outsiders if the tongue is severely involved. This may result in an erroneous diagnosis of mental defect, which is probably never present.

Since Henderson's analysis I have managed to find in the literature nine examples of the condition. Hicks (1943) reported four cases. The first patient had bilateral paralysis of the facial and abducens nerves. The second had bilateral facial and abducens paralysis with a supernumerary thumb and web fingers. The third patient was the mother of the second patient, and she had bilateral facial and abducens paralysis and no response to caloric or rotational stimulation of the labyrinths. Hicks's second and third patients indicate that hereditary factors may be operating in the causation of the syndrome. The fourth patient had paralysis of the facial and abducens nerves. Murphy and German (1947) reported a patient with bilateral facial and abducens paralysis, weakness of the muscles of mastication and defective formation of the musculature of the left side of the chest, the left breast and the left hand. Pneumoencephalographic examination of this patient suggested dilatation of the basal cisterns and hypoplasia of the pons. Hellström (1949) described two cases. The first patient had bilateral facial, abducens and hypoglossal paralysis with widened posterior and basal cisterns in the pneumoencephalogram. An electromyographic examination was performed and showed registrable activity in facial muscles which were clinically paralysed. The second patient had bilateral facial, abducens and hypoglossal paralysis, bilateral partial ptosis and paralysis of convergence. This last indicated that supranuclear lesions of the oculomotor nerve may occur. The second patient had been thought to be mentally deficient, but intelligence testing showed normal mental development, the original mistake having been made on account of the child's speech difficulty. Van Buskirk (1951) reported a patient who had bilateral facial, abducens and trigeminal paralysis. The last was so pronounced that the jaws could not be closed voluntarily. Paralysis of the trigeminal nerve to this degree is most unusual. Stansbury (1952) described a patient with bilateral paralysis of the abducens and facial nerves, partial involvement of the oculomotor and possibly the trochlear nerves and unilateral *talipes equino-varus*.

Acknowledgement.

I am indebted to Mr. J. T. Sheridan, of the Royal Alexandra Hospital for Children, who took the photographs.

References.

BONNEVIE, K. (1934), "Embryological Analysis of Gene Manifestations in Little and Baggs Abnormal Mouse Tribe", *J. Exper. Zool.*, 67: 443.

DANIS, P. (1945), "*Les paralysies oculo-faciales congenitales*", *Ophthalmologica*, 110: 113.

HELLSTRÖM, B. (1949), "Congenital Facial Diplegia", *Acta pædiat.*, 37: 464.

HENDERSON, J. L. (1939), "The Congenital Facial Diplegia Syndrome: Clinical Features, Pathology and Ætiology", *Brain*, 52: 381.

HICKS, A. M. (1943). "Congenital Paralysis of Lateral Rotators of Eyes with Paralysis of Muscles of Face", *Arch. Ophth.*, 30: 38.

MURPHY, J. P., and GERMAN, W. J. (1947), "Congenital Facial Paralysis", *Arch. Neurol. & Psychiat.*, 57: 358.

STANSBURY, J. R. (1952), "Moebius's Syndrome", *Am. J. Ophth.*, 35: 256.

VAN BUSKIRK, C. (1951), "Congenital Facial Diplegia", *U.S. Armed Forces M. J.*, 2: 1553.

MULTIPLE INTUSSUSCEPTION AND ITS ASSOCIATION WITH INTESTINAL AUTONOMIC DYSFUNCTION.

By RICHARD J. MULHEARN,

Fairfax Institute of Pathology, Royal Prince Alfred Hospital, Camperdown, Sydney.

ACUTE INTUSSUSCEPTION is a common pædiatric emergency, but one of the most unusual pathological features in this condition is the presence of multiple areas of intussusception. I am grateful to Dr. Eric Susman for permission to report this case, which presented a perplexing clinical story.

Clinical Record.

K.D., a male patient, was born on July 10, 1951, after an uncomplicated first pregnancy with an undetermined type of labour. From birth he was artificially fed under supervision and gained weight satisfactorily, but he was thought to be a backward child in that he was unable to support his head adequately. He slept in his own cot in a well-ventilated, comfortable room, and at night-time his mother noticed that he had a tendency to excessive sweating, particularly about the head and neck.

Apart from troublesome constipation during his early months, for which the usual remedies were satisfactory, the child appeared to be developing normally until the age of nine months, when he began to have frequent "turns", in which there was a general extensor contraction of the body associated with carpo-pedal spasm, and which were accompanied by screaming, laryngeal stridor and profuse perspiration. These were considered to be the manifestations of spasmophilia, and with a provisional diagnosis of rickets he was admitted to a children's hospital for investigation, where he remained for one month. During this time the "turns" diminished in both frequency and intensity. X-ray examination of the long bones and of the chest revealed no abnormality, the serological and biochemical examination of the cerebro-spinal fluid and hæmatological investigation did not lead to a diagnosis, and he was referred to Royal Prince Alfred Hospital on May 23, 1952.

Clinical examination was disappointing, in that the patient, a pale and listless child, obviously unwell, was destitute of significant diagnostic signs. He had none of the stigmata associated with mental retardation, although he was unable to support his head. His abdomen was soft; there was no tenderness, nor were any masses palpable. His cheeks were flushed and there was pronounced sweating about the head; yet he was apyrexial, with a respiration rate of 25 per minute and a pulse rate of 120 per minute, and the impression was that he was ill out of all proportion to his signs.

Hæmatological investigation revealed a hæmoglobin concentration of 11·0 grammes *per centum*, a leucocyte count of 28,000 per cubic millimetre, with a differentiation of 64% neutrophile granuiocytes, 31% lymphocytes and 5% monocytes, and an erythrocyte sedimentation rate of 15 millimetres per minute. X-ray examination of the skull revealed no abnormality.

The child was in hospital five days prior to his death. On the morning of the second day he was observed to have two "turns", in which there were clonic contraction

of the arms, protrusion of the tongue and an associated frothing at the mouth, together with respiratory stridor and a pronounced increase in respiration rate. There was no loss of consciousness or cyanosis. During the remainder of the day he was irritable, crying intermittently and perspiring profusely. He remained in this condition during the next twenty-four hours, except that on occasions there were noticed irregular clenching of his fists, twitching of the muscles of his arms and a dissociated rolling of his eyes. These "turns" were accompanied by stridor. On the day prior to his death these bizarre movements became less apparent, and he reverted to a state of listlessness with occasional periods of ineffectual crying. The following day his axillary temperature rose to 104° F., but his condition appeared to be otherwise unchanged until he was suddenly noticed to be profoundly shocked, with associated cyanosis and perspiring profusely. He failed to respond to resuscitation measures and died within an hour.

Autopsy Report.

Autopsy was performed four hours after death. The body was in a good state of nutrition and weighed 16 pounds 4 ounces. There was a slight degree of abdominal distension. An examination was made of the cranial, thoracic and abdominal cavities. In the brain there was an appearance suggestive of sclero-atrophic microgyria in the occipital lobes, but no more obvious abnormality was demonstrated. The thoracic viscera were normal.

Abdominal examination revealed a distended stomach, but the outstanding feature was the presence of four areas of intussusception in the small intestines. The first, situated 72 centimetres from the pylorus, was a direct jejuno-jejunal intussusception forming a mass six centimetres in length and 2·5 centimetres in diameter, the opposed mucosal surfaces of which were ulcerated and congested. There was no distension of the proximal part of

FIGURE I.

The feeding of the child whilst in hospital presented little difficulty, for he was given approximately six to ten ounces of milky food at regular four-hourly intervals, the last feeding being one of eight ounces, given five hours before his death. During the last forty-eight hours he passed five stools, each being well formed, yellow in colour, and without suggestion of blood or mucus. The last stool, found after death, may have been present two hours unnoticed or have been passed agonally. In this same forty-eight hour period the child vomited three times, a total in all of 13 ounces; in the last attack, which occurred five hours before death, he produced three ounces of milky vomitus.

The bedside chart indicated that there had been a progressive rise in (i) pulse rate, from 120 per minute on his admission to 170 per minute at death; (ii) respiratory rate, from 25 per minute on his admission to 80 per minute at death; and (iii) body temperature, from 96° F. on his admission to 104° F. twelve hours before death and 101·4° F. at the time of death.

the jejunum, and the distal part of the jejunum was collapsed, and no blood was present in the lumen. At a distance of 52 centimetres from this lesion a direct ileo-ileal intussusception was present, which was similar in appearance to the former, in that it formed a mass eight centimetres in length and 2·5 centimetres in diameter, in which there were congestion and mucosal destruction, with an absence of distension in the proximal part of the ileum and of blood in the distal part of the ileum. Surgical reduction of either of these lesions would not have been possible.

Situated 22 centimetres from this lesion was the first of two small direct ileo-ileal intussusceptions, separated from each other by 11 centimetres of normal ileum, each forming a reducible mass three centimetres in length and two centimetres in diameter, in which congestion was minimal, but in which a fibrinous deposit was present on the mucosal surfaces. In the ileum between the last intussusception and the ileo-caecal junction there were two areas in which segmental spasm had occurred. The first

of these consisted of a cord-like portion of contracted intestine measuring 13 centimetres in length and one centimetre in diameter, disposed between normal segments of bowel. The second area was 42 centimetres in length and extended as far as the caecum. There was no evidence of early intussusception in relation to these segments. (See Figure I.)

In the large bowel there was a retrograde colo-colic intussusception in the descending colon, together with irregularly disposed areas of spasm, of dilatation and of normal colon. Contracted segments were present in the ascending, transverse and descending colon, a total in all of eight areas, the smallest being a narrow constriction one centimetre in length and one centimetre in diameter, and the most extensive a segment of colon four centimetres in length and one centimetre in diameter, which was immediately adjacent and distal to the intussusception.

The interposed areas of colon were for the most part dilated, the most extensive area of dilatation being a segment of descending colon nine centimetres in length and 4·5 centimetres in diameter, with its distal end forming the intussuscipiens of the retrograde intussusception. This intussusception formed a readily reducible mass, in which neither vascular nor mucosal changes were evident.

Histopathology.—Representative sections were taken from the small and large bowel for microscopic examination, which revealed no histological abnormality in the architecture of the intestinal wall. Ganglion cells were present in the myenteric plexus.

Discussion.

Fitzwilliams (1908) made an analysis of 1000 cases of intussusception, and among these he found 11 examples of multiple intussusception. He described them as composed of a primary and a varying number of secondary lesions, the primary being that in which there are changes progressing towards gangrene and/or irreducibility. He classified them on a basis of the site of these lesions, and in his series the commonest site for the primary intussusception was the ileo-caecal region, which was involved in eight cases. There were three cases in which more than two areas of intestine were involved, and two of these were examples of quadruple intussusception confined to the jejunum, each being associated with intestinal polypi.

The ætiology in many cases remained obscure, but a mechanical explanation was offered for multiple lesions of the colon—namely, that a primary direct intussusception might progress to form a double intussusception, the partial reduction of which resulted in two areas of intestine being involved.

There have been many reports in the literature of isolated cases of multiple intussusception, and although a correlation is sometimes made with polypi, secondary neoplasia and localized enteritis, in many cases no cause is evident. Baron (1932) reported the case of a two year old boy in whom there was found at operation the condition of quintuple intussusception which was confined to 25 centimetres of the jejunum. No cause could be found. A similar case was published by Kahle (1941), in which one ileo-caecal and six separate enteric masses were present. The association of multiple intussusception of the ileum with metastatic melanomata was reported by Kander (1938). Gill (1938) published the operation report of a child who had six to seven ileo-ileal intussusceptions, the first having progressed five centimetres and caused obstruction and distension of the proximal part of the jejunum with signs of mural congestion. After reduction active peristalsis commenced, and it was observed that in the affected segment there was an attempt to reproduce the intussusceptions. Although no definite ætiology could be determined, the enlarged mesenteric lymph nodes were thought to be tuberculous.

Multiple intussusceptions of agonal origin are occasionally found at autopsy, the clinical picture usually being that of a medical or surgical emergency with death within forty-eight hours. Such lesions are often retrograde, are readily reducible and show little evidence of congestion. Ladd and Gross (1934) discount the view that retrograde intussusceptions occur only at the time of death or impending death, and they report the case of a retrograde ileo-ileal intussusception with recovery.

Falor (1948) reported the case of a soldier who suffered a perforating injury of the abdomen following the explosion of an aerial bomb. At operation there was found a laceration of the sigmoid colon together with multiple enteric intussusceptions consisting of one direct jejuno-jejunal and three contiguous direct and retrograde ileo-ileal lesions. He postulated that the blast accompanying detonation produced increased intraabdominal pressure, precipitating the formation of intussusceptions in an intestine already subjected to the adrenergic stimulation of battle. The changes in gastro-intestinal motility accompanying emotional influences are well known, the response being one either of excitation or of inhibition of long or of short duration.

In experimental animals many observers have shown that the usual effect of prolonged stimulation of the branches of the vagi to the intestine is to produce an increased tone of intestinal muscle and to accentuate peristalsis. A similar effect can be obtained by the use of acetylcholine, with a response in proportion to the amount of drug administered. Hypothalamic stimulation produces a variable response, but intestinal excitation does occur with a stimulus of certain strength and duration. The role of the cerebral frontal cortex in influencing the excitation and inhibition of gastro-intestinal motility has recently been discussed by Youmans (1952) with corroborative experimental evidence. More recently Kern and Almy (1952) have investigated the effects of acetylcholine and methacholine on the human colon, using a balloon kymograph to record sigmoid motility. Their conclusions were that these substances produce almost complete abolition of sigmoid contractions with an increased propulsive activity in the proximal part of the colon. It is apparent, therefore, that the interrelationship of the nervous control of intestinal movement is still a matter of some doubt.

In the case under consideration the absence of any anatomical basis for the development of the multiple intussusceptions suggests that the mechanism of causation is neurophysiological. In the small intestine it would appear that some form of cholinergic stimulation had enhanced the tone of the intestinal muscle, causing segments of localized spasm, and that increased peristaltic activity produced an invagination of these areas with subsequent progression to the formation of intussusceptions. The unusual segmental appearance of the large bowel is also thought to be due to an excitatory influence producing a pattern of multiple areas of spasm. The origin of any such influence is a matter of conjecture. Examination of the central nervous system revealed no abnormality in the frontal cortex or the hypothalamic area, and the occipital microgyria is considered to be a coincidental condition. It is unlikely that these areas of spasm were of the nature of an achalasia, because of the representation of ganglion cells in the myenteric plexus of the intestinal wall. In this retrospective correlation of the clinical and the autopsy data one can only submit an interpretation of an autonomic dysfunction of the small and large intestines while the primary ætiological factor remains unknown.

Summary.

1. The clinical history is given of a child in whom there were found at autopsy four unsuspected direct intussusceptions of the small intestine, together with an irregular segmental contraction of the colon and a retrograde colo-colic intussusception.

2. A brief review is made of the condition of multiple intussusception, with reports of pertinent cases from the literature.

3. The physiology of intestinal excitatory influences is considered and a correlation suggesting evidence of cholinergic stimulation is submitted for this case.

Acknowledgements.

The writer wishes to express his thanks to Mr. Virgil Lo Schiavo for the pen-and-ink drawing of the autopsy specimen, and to Dr. R. W. T. Blackburn and Dr. V. J. McGovern for their advice and criticism.

References.

BARON, C. (1932), "Case of Multiple Intussusceptions", *Kentucky M. J.*, 30: 406.

FALOR, W. H. (1948), "Multiple Intussusceptions, Direct and Retrograde, of Traumatic Origin", *Ann. Surg.*, 127: 730.

FITZWILLIAMS, O. C. L. (1908), "The Pathology and Etiology of Intussusception from the Study of 1000 Cases", *Lancet*, 1: 628.

GILL, W. G. (1938), "Multiple Intussusception in a Child", *Brit. J. Surg.*, 25: 707.

KANDER, H. S. (1938), "Multiple Intussusceptions Caused by Secondary Melanomata", *Lancet*, 2: 139.

KARLE, H. R. (1941), "An Analysis of 151 Cases of Intussusception from Charity Hospitals of Louisiana at New Orleans", *Am. J. Surg.*, 52: 215.

KERN, F., and ALMY, T. P. (1952), "The Effects of Acetylcholine and Methacholine upon the Human Colon", *J. Clin. Investigation*, 31: 555.

LADD, W. E., and GROSS, R. E. (1934), "Intussusceptions in Infancy and Childhood", *Arch. Surg.*, 29: 365.

YOUMANS, W. B. (1952), "Neural Regulation of Gastro-Intestinal Motility", *Am. J. Med.*, 13: 209.

Reviews.

Medicine: Essentials for Practitioners and Students. By G. E. Beaumont, M.A., D.M. (Oxon.), F.R.C.P., D.P.H. (London); Sixth Edition; 1953. London: J. and A. Churchill, Limited. 9″ × 6½″, pp. 852, with 66 illustrations. Price: 37s. 6d.

IN the preface of this book Dr. Beaumont states that in revising this edition he has endeavoured to omit what one of his reviewers referred to as "organic nonsense" and "historical nonsense" of medicine, and at the same time to include those additions to our knowledge which are sometimes described as recent advances. It appears that he has succeeded in this endeavour, and the size of the book is the same as the last edition, namely, 780 pages, with the addition of an excellent index of 48 pages. Many sections have been entirely rewritten and in others the treatment has been recast to conform with later practice. Short notes may be found on about fifty subjects, some of which have been discussed in medical journals during the past few years, examples being the cascade stomach, bile peritonitis, angiocardiography and cardiac catheterization, bone marrow histology, the Coombs test, intravenous iron therapy and the collagen diseases.

A popular remark by reviewers is that the day of the one-man text-book of medicine is past. However, something can be said in its favour when it is written by an experienced clinician, particularly for study by students, who become confused by the overlapping of opinions expressed by multiple authors. This edition is well produced and up to date, and will no doubt retain its popularity with students, and with those busy graduates who wish to refresh their memories but have time only for "essentials".

The Control of Communicable Diseases. By Hugh Paul, M.D., D.P.H., with a foreword by G. S. Wilson, M.D., F.R.C.P., D.P.H.; 1952. London: Harvey and Blythe, Limited. 10″ × 7½″, pp. 536, with 30 text figures. Price: 55s.

IN the admirably written foreword to this book Professor G. S. Wilson states: " . . . the science of epidemiology is one of the most fascinating branches of medicine." The author of this lengthy text-book is Hugh Paul, M.D., D.P.H. He is Medical Officer of Health of Smethwick County Borough, Staff Examiner in Hygiene at the University of London, and Lecturer in Public Health at the University of Birmingham. He is obviously an enthusiastic epidemiologist with a wonderful knowledge of the literature of the subject and with a clever and facile pen. The early chapters of the book deal mainly with the historical aspect of epidemic diseases and are of absorbing interest. This high standard is scarcely maintained throughout the book and some of the later passages become rather wordy and even dull.

The ætiology, pathology and modes of transmission of the individual diseases are described in detail. The book deals most thoroughly with methods of control, including immunization procedures and public health measures. One must applaud the courageous way in which the writer assails outmoded preventive measures such as terminal disinfection. However, as stated in the publishers' notes, "the author in giving both conventional and controversial points of view is careful to state the argument on both sides". In particular is this noted in the chapter on smallpox and vaccination. The arguments for and against mass vaccination are given without bias. This chapter can be strongly recommended to all public health authorities, practising physicians and medical students.

The section on gastro-intestinal infections is another that can be well recommended. It is interesting to note that the author regards coagulase-positive staphylococci as the most important and the most frequent cause of food poisoning. He is careful to point out, however, that it is difficult to obtain more than circumstantial proof that the organism found in the stool is the essential cause of the disease, because the only methods of proof which we have at our disposal depend on human volunteers or monkeys, neither of which are easily available.

The practising physician may be disappointed that so little space, apart from chemoprophylaxis, is given to the influence of modern antibiotics in the control of bacterial diseases. The author rightly makes very little attempt to introduce methods of treatment. It may be debated whether the widespread use of penicillin and other antibiotics has had much effect in the control of infectious diseases; and yet it is difficult to find any other cause for the decline in incidence and severity of scarlet fever and other streptococcal infections.

Apart from this not very valid criticism, the book can be recommended as an important addition to the literature on communicable diseases.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Clinical Cardiology", edited by Franklin C. Massey, A.B., M.D.; 1953. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 9″ × 6½″, pp. 1114, with 212 illustrations. Price: £7 5s. 3d.

This book covers all aspects of clinical cardiology—basic sciences, diagnosis, therapy, with laboratory aids. Surgical as well as medical aspects are covered.

"Diseases of the Digestive System", edited by Sidney A. Portis, B.S., M.D., F.A.C.P.; Third Edition; 1953. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 10½″ × 7″, pp. 1130, with 269 illustrations, five in colour. Price: £10 15s.

The work of 57 contributors.

"Functional and Surgical Anatomy of the Hand", by Emanuel B. Kaplan, M.D., F.A.C.S.; 1953. Philadelphia: J. B. Lippincott Company. Sydney: Angus and Robertson, Limited. 10″ × 7″, pp. 304, with 132 illustrations. Price: £5 7s. 6d.

"The anatomic structures in this book are described from the viewpoint only of function and surgery."

"Tumors of Bone: A Roentgenographic Atlas", by Bradley L. Coley, M.D., F.A.C.S., and Norman L. Higinbotham, M.D., C.M., F.A.C.S.; *Annals of Roentgenology*; Volume XXI; 1953. New York: Paul B. Hoeber, Incorpoorated. 10½″ × 8″, pp. 222, with 172 illustrations. Price: $10.00.

This is one of the well-known series of "Monographic Atlases".

"Therapeutics in Internal Medicine", by eighty-four authorities, edited by Franklin A. Kyser, M.D., F.A.C.P.; Second Edition; 1953. New York: Paul B. Hoeber, Incorporated. 10½″ × 7½″, pp. 852. Price: $15.00.

The basic pattern of the book is to present only material related to treatment of medical diseases.

"Segundo Congreso Uruguayo de Cirugia, December 5-8, 1951"; President, Eduardo C. Palma, M.D., Secretary-General, Juan E. Cendan Alfonzo, M.D.; 1951. Montevideo: Secretaria General. 9½″ × 7″, pp. 640, with about 220 illustrations.

The transactions of the Second Uruguayan Surgical Congress, including sectional meetings and three plenary sessions on post-operative and post-traumatic pulmonary atelectasis, the treatment of acute gall-bladder disease and the treatment of hydatid cyst of the lung and its complications. It is entirely in Spanish.

The Medical Journal of Australia

SATURDAY, AUGUST 29, 1953.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: surname of author, initials of author, year, full title of article, name of journal without abbreviation, volume, number of first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE PHOSPHATE CYCLE.

To Liebig is largely due the exaggerated emphasis placed on nitrogen as an essential for life both plant and animal. In his day it was believed that the only increment to compounds of nitrogen in the soil occurred in small quantities during thunderstorms. Sir William Crookes accepted the Liebig doctrine, and in 1898 as president of the British Association for the Advancement of Science uttered a gloomy forecast of the inability of farming land to support the growing population of the world owing to nitrogen dearth. Though a distinguished chemist, he failed to envisage the trapping of atmospheric nitrogen through physico-chemical procedures, whilst, being ignorant of botany, he was unaware of the fact that most species of Leguminosæ have the power, through symbiotic bacteria, of fixing nitrogen and therefore making it available to the host plant, to the soil and to life in general. Hence it happened that the critical year he mentioned as precipitating world famine actually produced a record harvest of grain. The atmosphere can therefore furnish carbon and nitrogen, and as long as there is adequate water there will be sufficient hydrogen and oxygen for the chemical basis of life. It is a very different matter with the essential minerals and such non-minerals as sulphur and phosphorus, for these must be present in the soil, and if the plant is harvested a decline in the available amount is inevitable unless artificial enrichment is resorted to. Nitrogen certainly plays an important part in biochemical in-vivo happenings, for where there is nitrogen there is instability, and instability is of paramount importance in living tissue. The discovery of the significance of phosphoric acid (for all phosphorus in life is in oxidized form) came later and may be said to date from the classic research of Harden and Young on the oxidation of carbohydrates. The main solid ingredient of the nucleus, which presides over the activities of the cell and where genic properties are housed, is phosphated protein; the insulating material of nerve fibres is in large measure phosphated fat; the contraction of muscle is conditioned by an explosion of adenosine triphosphate and this is reconstituted by an explosion of creatine phosphate. Finally the creatine phosphate is restored by the energy liberated by oxidation of carbohydrate, and here union with phosphoric acid is indispensable. The fermentation of sugar by yeast and the degradation of lactose into lactic acid will not take place in the absence of phosphoric acid or phosphate. The mineral reinforcement which makes bone an engineering marvel is calcium phosphate, hence the exceptional concentration of this salt in the milk of the cow to suit the quick bone growth of the calf, being four to five times that necessary for the human infant. Finally, in the "buffering" of the blood, phosphates play a notable part. An adequate supply of phosphate is thus necessary for plant life and therefore for animal life. The sites of the world's greatest fisheries are determined by the phosphates available for fish food. Mention may be made here of the Scotch experiments in which artificial increase of phosphate and nitrate in the water almost trebled the rate of growth of the fish, interesting academically but economically unsound, for we really ought to be taking phosphate out of the sea and not putting it in. American farmers with ponds and slow-moving creeks inhabited by carp and similar fish found that it paid well to augment the phosphate supply with addition of "super".

What is the origin of the phosphate occurring naturally in soil, lake, river and sea? Every year disintegrating rock liberates phosphate, of which a small fraction is captured by plant life; the greater part is carried to the sea and here once more a small fraction is incorporated in plant and animal structures, but the larger part sinks to the "dark, unfathomed caves" of the ocean. In the opinion of Sir Frederick Keeble man is a mere incident in the passage of phosphate from the rocks to the ocean abyss. How does Australia fare in the distribution of phosphate in soil and water? The answer is, unfortunately, that Australia is badly off in this respect. In the United States the percentage concentration of phosphate in soils, reckoned as phosphorus pentoxide, is on the average 0·1 to 0·15; in Australian soils the percentage varies between 0·01 and 0·06. In consequence plant life in Australia has, through long operation of natural selection, attuned itself to phosphate dearth; imported plants make apparently an effort to maintain their original phosphate percentage, but fail to do so—this is exemplified in the wheat grain, which has a phosphate percentage amongst the world's lowest. Iron ore with high phosphate content yields basic slag, which is an excellent fertilizer, but, alas, Australian iron ore has a low phosphorus content and so basic slag is not locally available. Certain amounts of bird and bat guano are to be found, but the quantities are too small to affect the general situation. Rock phosphate, which is mostly tri-calcium phosphate, can be used directly as a fertilizer, but the Waite Institute results show that a rainfall over

20 inches, and uniformly distributed throughout the year, is necessary; moreover the fertilizing action takes some three years to develop and is inferior to that of the usual superphosphate. In general rock phosphate is treated with 70% sulphuric acid and is converted into calcium sulphate and mono-calcium phosphate. This mixture is the superphosphate used on farms and pasturage and can be immediately utilized by plants. In America the rock phosphate is treated with concentrated phosphoric acid and not sulphuric acid, and so a product twice as effective as "super" is produced. Importation of rock phosphate from Nauru and Ocean Island ceased in November, 1941, but was resumed in 1946; in the interval Australia fared badly. A valuable survey of the phosphate resources of the Commonwealth has been prepared under the auspices of the Ministry of National Development. South Australia possesses the largest deposits, but in this, like that obtained elsewhere in Australia, the iron oxide and the alumina exceed the permissible maximum. Even if the quality were better the total amount would be not more than a mere fraction of what is necessary.

The story of phosphate in Australia bears an unfortunate resemblance to the story of mineral oil in Australia—both are necessary and so both are imported. Let it be remembered that Australia is exporting large amounts of phosphate in the form of carcasses of cattle, sheep and rabbit and also in milk products, and so to maintain this export we must replace the lost phosphate. This is an exceedingly serious matter, for without such phosphate Australia could not feed her population as it is now and all food export would cease. H. G. Wells in his book "Phœnix" made a vigorous protest against our haphazard use of volcanic upheavals in the far-distant past to supply us with the needed phosphates and advocated a world-wide and coordinated attack on the problem of investigating and controlling supplies on a vaster scale. Without doubt the suggestions of Wells, though petulantly expressed, are constructive and feasible and must eventually be put into operation. In the meantime, how can Australians supplement the low phosphate of their diet? So long as they were big eaters of animal flesh no problem really existed, for, as stated, muscle is a phosphate engine; but with the sharp decline in meat-eating phosphate deficiency looms up as a regrettable possibility. What foodstuffs can supply phosphate in high amounts? In the front rank we would place cheese, which has more than three times the phosphate of beef and more than twelve times that of potato. Cheese in Australia should be seriously eaten as a food and not as a savoury. It has been suggested, and there is much in the suggestion, that a ration of cheese would be of greater service to children than one of milk. Professor Carlson, of America, recommended addition of phosphate to table salt, but the amount supplied in this way would be far inferior to what cheese offers. Beans are put to better use in America than here and can also help. But the far greater and more urgent problem is how to increase the world supply and how to distribute this when made available. The international effort recommended by Wells must sooner or later be adopted. In the meantime Australian resources can be subjected to further examination, for phosphate is of greater importance than uranium.

Current Comment.

HEPARIN AND ANGINA PECTORIS.

LITTLE support seems to be forthcoming for a suggestion made in 1951 that heparin might be useful in the relief of *angina pectoris*. The suggestion arose in a paper by D. M. Graham and six other authors[1] on the influence of heparin upon lipoprotein metabolism, which was part of a larger study on blood lipids and human atherosclerosis. In the course of the work two of the authors, T. P. Lyon and A. Yankley, made the incidental and unexpected clinical observation that 55 out of 59 patients with moderate or severe *angina pectoris* reported considerable relief from this symptom with a drastic decrease in nitroglycerin requirement soon after the heparin injections were given. This persisted in some patients treated for as long as six months. In seven cases symptoms returned when saline replaced heparin in the injections. No attempt is made to explain or to assess these findings in the paper. Reference is made to previous reports by Gilbert and Nalefski and by Nichol bearing on the action of heparin as a coronary vasodilator, but evidence indicated that the effect probably had neither a vasodilator nor an antithrombotic basis. Stimulated by this report, H. I. Russek, K. F. Urbach and A. A. Doerner[2] applied an objective technique to the measurement of the effect of heparin on induced myocardial ischæmia. By means of the Master two-step test they selected 14 patients with varying degrees of coronary insufficiency on the basis of the constancy of their electrocardiographic response during control periods. They found that the intermittent administration of heparin to these subjects had no significant effect on the electrocardiographic response to standard exercise. Moreover, none of the patients was significantly relieved of his anginal symptoms.

Later in the same year, H. Miller, W. J. Zinn and G. C. Griffith[3] reported to the American Society for the Study of Arteriosclerosis a controlled study on patients with *angina pectoris*; in this either heparin or saline was given, but patients, laboratory workers and clinicians did not know which. It was found that with heparin therapy, six patients were improved, three were unchanged, five became worse; with normal saline therapy, nine were improved, four were unchanged, none became worse. Appropriate laboratory studies revealed no significant differences between the effects of heparin and of placebo therapy. Of 14 doctors treated by these investigators in private practice, none recorded relief from anginal symptoms as a result of heparin therapy.

Next appeared a paper by H. Engelberg[4] recording results in line with those reported by Graham *et alii*. Engelberg treated with heparin 29 subjects of severe coronary atherosclerosis who had not responded to previous therapy. He states that in more than half the cases the incidence of anginal attacks was reduced, and in a few cases the improvement was "very marked". Confirmatory evidence of the beneficial effect of heparin is offered in the form of exercise electrocardiograms and ballistocardiograms. Engelberg is critical of the use of placebos as a means of control and used them only to a limited extent.

Subsequent reports on the subject are all on the negative side. M. J. Binder *et alii*[5] compared the effect on *angina pectoris* of intravenous injections of heparin and of equivalent volumes of isotonic saline. Each of 34 patients received both forms of treatment twice a week; for 18 patients a month of heparin therapy preceded a month of saline therapy, while for 16 patients the sequence was reversed. The study failed to demonstrate any beneficial effects of heparin therapy. Incidentally, the discussion in

[1] *Circulation*, November, 1951.
[2] *J.A.M.A.*, July 12, 1952.
[3] *Circulation*, September, 1952.
[4] *Am. J. M. Sc.*, November, 1952.
[5] *J.A.M.A.*, March 21, 1953.

this paper on the use of placebos and the interpretation of results when they are used is of interest in relation to Engelberg's limited reliance on placebos in his study.

The two most recent reports,[1] both of carefully controlled studies, would seem to leave the matter in little doubt. A group of investigators from Copenhagen, Alice Grüner, Tage Hilden, Flemming Raaschou and Henning Vogelius, treated 27 patients suffering from the anginal syndrome. All the patients were given first a placebo for two to four weeks, then heparin for seven to eleven weeks, and finally the placebo again for three weeks. At the same time efforts were made to keep other factors constant in the patients' environment and treatment. The results reveal the medley of subjective responses to both forms of medication familiar from many of the other reports, but no clear indication of subjective benefit from heparin therapy; nor did objective findings in the electrocardiogram, blood pressure readings or ophthalmoscopic findings show any beneficial effect of heparin. The second of these two papers reports a carefully controlled investigation of 18 cases in which the effects of heparin were compared with those of a placebo. The investigators, S. H. Rinzler *et alii*, used the daily report card system previously referred to in these columns on December 23, 1950, in a comment on the therapeutic value of khellin. This is a very revealing system for the investigation of a subjective response. Rinzler *et alii* reached the conclusion, based on the analysis of 1883 report card days recorded by their 18 patients, that heparin has no greater effect than a placebo in the control of effort angina. This is the position as it now stands, and it would need very strong further evidence to bring heparin again into serious consideration in this role. The interesting part of the matter, and this is why we have presented details despite the finally negative conclusion, lies in its demonstration of therapeutic fallacy. Whether or not evidence is later brought forward to show that heparin is of value in relieving *angina pectoris*, this series of reports, describing conscientious and mostly well-controlled work, shows in a startling fashion the conflicting results possible when a subjective response is recorded. It emphasizes the foolishness of making dogmatic pronouncements (and people do make them) on the value of a drug on the basis of a small and uncontrolled series.

SMOKER'S RESPIRATORY SYNDROME.

It is well known that personal experience of a malady provides one of the strongest motives for inquiry into its nature, cause and treatment. G. L. Waldbott[1] has written an article which is an instance of this; his interest in "smoker's respiratory syndrome" was aroused by his own experience of it. Until recently, medical literature concerned with tobacco smoking dealt mainly with cardiovascular changes, such as tachycardia, extrasystoles, *angina pectoris*, vasoconstriction of peripheral blood vessels and hypertension. It is common knowledge that smoking irritates the upper respiratory tract; indeed this is supported even by the advertisers of various brands of cigarettes, who, when they assert that a particular brand does not irritate the throat, are tacitly proclaiming that all other brands do. Until recent work on a possible association between smoking and cancer of the lung, there were very few articles in the literature which dealt with the effect of smoking on the respiratory tract. Waldbott mentions Myerson,[2] who in 1950 described a lesion of the vocal cords due to irritation from smoking. This, he said, originated from a circumscribed œdema that led to an inflammatory lesion and later assumed the appearance of an œdematous fibroma.

Waldbott's own experience was as follows. In February, 1949, he had an unusually severe upper respiratory catarrh, which followed the usual pattern, changing to a descending catarrh with expectoration of purulent sputum. A chronic cough developed, accompanied by asthmatic wheezing, dyspnœa and a sensation of tightness in the trachea and upper part of the bronchial tree. This condition was worse at night and could be partially controlled by antihistaminics, although there was no personal or family history of allergy. Attacks during the day were precipitated by exposure to smoke or to any irritating fumes. Three or four times he experienced chest pains that appeared suddenly without apparent cause, radiated into the arms and neck and lasted for from five to ten minutes. A chest X-ray examination, sputum examination for fungi and eosinophile cells, an electrocardiogram, eye-ground examinations and spirometric recordings revealed nothing abnormal. On several occasions wheezing was precipitated by smoking and coughing, and wheezing was more pronounced on Monday mornings which fitted in with the fact that the patient smoked from twenty to thirty cigarettes on Sundays, whereas his week-day quota was five or six. On the basis of these observations Waldbott stopped smoking before undergoing bronchoscopic studies which were contemplated to exclude a neoplasm. Cessation of smoking effected a complete cure, followed by subsequent freedom from the upper respiratory infections which he had experienced frequently over a number of years.

Since his own experience, Dr. Waldbott has observed a similar syndrome in thirty-one patients from twenty-eight to seventy-two years of age, of whom 20 were men and 11 were women. All the patients were cured or their condition was considerably relieved on elimination of smoking. In several instances its resumption precipitated a recurrence of the condition. In each case evidence of allergy was absent. By this and other characteristics, "smoker's asthma" or "smoker's respiratory syndrome" can be readily distinguished from bronchial asthma. Waldbott avers that allergic sensitivity to tobacco played no part in these cases and that the symptoms were due to chemical irritation from tobacco itself or other irritants used in its preparation. The wheezing, he believes, can be explained by the fact that the mucus formed because of chronic inflammation partially obstructs the air passages. It cannot, of course, be denied that allergic respiratory sensitivity to tobacco does exist. Waldbott quotes a report by F. L. Rosen and A. Levy[1] of an infant who had typical asthmatic attacks which were promptly relieved when his parents stopped smoking and were renewed when they resumed smoking. The child's skin reacted to tobacco and house dust. Also it is stated that between 9% and 10% of patients with respiratory allergy suffer aggravation when exposed to tobacco smoke. However, according to Waldbott, the irritating action of substances in tobacco smoke, such as nicotine, pyridine, collidine, ammonia, hydrocyanic acid and carbon monoxide, is far more important than true sensitization. There is, of course, probably considerable individual variation in tolerance to these irritants.

Waldbott believes that "smoker's respiratory syndrome" is not uncommon, though its relation to smoking is not always easy to prove. Often, he states, when told that smoking is the cause of their disease, patients do not return to him because they refuse to give up smoking. In some persons irreversible lesions undoubtedly develop as a result of the persistent irritation and frequent infections. Patients with such advanced changes were not included in the present series because it was impossible to establish a clear relationship with smoking since its elimination did not clear up the condition. If, as we are beginning to suspect, there is a connexion between smoking and lung cancer, it is likely that intermediate syndromes, such as that described by Waldbott, do, in fact, occur. Recognition of "smoker's asthma" thus becomes of paramount importance, not only because it may be cured completely by the elimination of smoking, but because the diagnosis may save the patient from years of fruitless treatment for a supposedly allergic disorder, or from investigations such as bronchoscopy; it may even play a part in the prevention of cancer of the lung.

To smoke or not to smoke? The pipe and the cigarette are at the bar these days, accused, if not convicted, of

[1] *Am. J. Med.*, April, 1953.
[2] *J.A.M.A.*, April 18, 1953.
[3] *Ann. Otol., Rhin. & Laryng.*, June, 1950.

[1] *J.A.M.A.*, October 21, 1950.

causing quite a number of ills. It is not easy to prove all the charges against them; and powerful interests, huge revenues, widespread addiction and social custom are deeply concerned in their defence. Some medical men have maintained that the relaxation conferred by tobacco in this fevered age outweighs its dangers; they say that it is a useful, perhaps a necessary, safety valve. As Ronald Bodley Scott[1] observed, the view the doctor takes is dictated rather by the number of cigarettes he smokes himself than by a profound knowledge of the pharmacology of tobacco. However this may be, more and more facts are being established about the pharmacology of tobacco, and it behoves us, as practitioners of medicine, to be honest about the possible effects of smoking even if we find it difficult to back up precept by example.

RENAL PAPILLARY NECROSIS.

NECROTIZING renal papillitis is a form of suppurative renal infection which does not seem to be recognized as clearly as it should, by reason of its severe and usually fatal nature. It is known as affecting diabetics as a terminal event, but may also occur in non-diabetics. J. S. Silberstein and J. T. Paugh present a review of the literature in which three out of eighteen references date back to the last century;[2] and E. E. Mandel contributes an editorial article in another journal in which several other recent references are quoted.[3] Silberstein and Paugh have found that it is often confused with pyelonephritis, whereas its pathology is distinctive. They also describe three cases of their own, and publish macroscopic and microscopic studies of the condition. The pathology is briefly reviewed, and a clear picture is established. The lesions are described as "rather typical". The papillæ stand out from the rest of the renal tissue, yellowish in colour, and the necrotic portion may involve only the tips of the papillæ or may affect the greater part of the pyramids. Sloughing may be seen in very acute and severe lesions. Pyelonephritic changes may also be seen in the cortex of the affected organs, but these are not part of the true picture. Microscopically coagulation necrosis is seen involving one or more of the renal papillæ, and the renal architecture may be largely lost. Silberstein and Paugh have found intense infiltration in the surrounding hyperæmic zone, with polymorphonuclear cells in the preponderance, but in this they differ from other writers, who have reported a predominance of mononuclear cells, especially in diabetics. Mandel, pointing out that the condition may be unilateral or bilateral, regards it as a serious complication of acute pyelonephritis, and thus explains its customary occurrence in diabetics or persons with urinary obstructive lesions. In animals similar conditions have been observed in toxic states, and work on these has suggested that ischæmia plays an important role. This brings the whole picture into line with the toxic ischæmic lesions of the kidney which was a now well-known subject of wartime research, such as that carried out on the "crush syndrome". Thus medullary necrosis would be attributable to acute tissue anoxia due to vasoparalysis, congestion and the formation of multiple thrombi. Silberstein and Paugh, and Mandel give data derived from actual cases, and Mandel brings the subject into the recent war atmosphere by pointing out that papillary necrosis has been observed as a complication of the epidemic hæmorrhagic fever of the Far East. In this disease Mayer, quoted by Mandel, describes pale yellow areas of ischæmic necrosis in the midst of hyperæmic and hæmorrhagic pyramids. Some histological evidence apparently exists to support the concept of a virus having a specific action on the vasomotor nerves. Mandel remarks that hyperæmia and ischæmia appear to be contradictory explanations, but perhaps both mechanisms may exist in a kidney showing necrotizing lesions. Silberstein and Paugh state in their summary that they doubt if necrotizing papillitis is really a fulminating form of pyelonephritis. They also draw attention to one of their patients, who had a carcinoma of the prostate gland, and in whom the obstructive lesion affected only the left side. The right ureter was patent, but it was the right and not the left kidney which showed the lesions of necrotizing renal papillitis. They were further struck by the absence of serious vascular lesions in the subjects of diabetes who succumbed to this condition. They end by expressing the hope that this condition, invariably fatal in present experience, though fortunately uncommon, it would appear, may eventually yield to energetic treatment by the increasingly powerful therapeutic weapons placed in the clinicians' hands.

[1] *Brit. M. J.*, March 29, 1952.
[2] *Ann. Int. Med.*, April, 1953.
[3] *Arch. Int. Med.*, April, 1953.

CORTISONE IN THE TREATMENT OF THE SHOULDER-HAND SYNDROME.

REFERENCES have been made in these pages recently to the so-called shoulder-hand syndrome following myocardial infarction. This painful disability is not seen exclusively in persons suffering from the aftermath of coronary emergencies, as it also may occur in hemiplegia, cervical osteoarthritis and the protrusion of a cervical intervertebral disk, but its association with the reflex phenomena familiar in myocardial infarction has given it special interest and importance. Henry I. Russek, Allen S. Russek, Alexander A. Doerner and Burton L. Zohman have given it a particular interest by studying the results of cortisone in its treatment.[1] They give a brief description of the symptoms and relate these to the disturbed physiology of the parts affected. They have no doubt that the syndrome is not merely coincidental, and remark that it usually begins to be apparent within six months of the cardiac attack, and is often well developed within four weeks. Since the spinal neural segments involved in the swelling, pain and stiffness of the hand and fingers and the pain in the shoulder that are characteristic of the condition are those concerned in the severe thoracic pain of the original attack, it is logical to find a connexion between the two sets of symptoms. The authors hold that the afferent stimuli entering the spinal cord at the first to the fourth segmental levels activate the internuncial cells of that area, and by upward spread involve the anterior horn cells, with consequent disability of the muscles of the shoulder. It may be that a contributory factor is tension of the muscles concerned with the physiological object of lessening pain; another is certainly disuse. Russek and colleagues also recognize three stages, the first two lasting a few months, and the third of indefinite extent. During the first stage there is pain, with hyperæmia, firm œdema and limitation of movement, and the hand becomes pink or bluish and its grip weakens. During the second stage the patient's discomfort lessens, and pain and œdema recede, but movement becomes more restricted, and the fingers become stiff and deformed. The last stage may last for months, during which slow irreversible changes occur, leaving a shiny atrophic hand, with osteoporosis and fixation of the flexed fingers. Periarthritis of the shoulder may or may not accompany the changes in the hand. The authors state that the discomfort arising from this condition may be greater than that due to anginal pain, and, indeed, arising some time after the cardiac accident, its connexion with this may go unrecognized. Of course, not all patients have so uncomfortable a sequel, and many who are so affected are relieved by routine measures, but severe trouble may call for repeated block of the stellar ganglion, and sympathectomy has also been performed. For these reasons the authors were anxious to try the effect of cortisone, recognizing that it was not without risk, as the potentially dangerous side-effects of thrombotic complications in older people may be encountered. They have collected a series of 17 patients who have been treated with cortisone after coronary occlusion, and 26 others were similarly treated, who were suffering from comparable sequels of hemiplegia. All these patients were quite free from any alarming thrombotic manifestations.

[1] *Arch. Int. Med.*, April, 1953.

The immediate results were most encouraging. Five patients were promptly relieved of pain and disability; within twenty-four to forty-eight hours they were free of discomfort, and could move the shoulder with varying degrees of freedom. The vasomotor disabilities of the hand also disappeared in these persons, and in those showing this degree of improvement there was no recurrence of symptoms. Eight other patients improved to a marked degree, though their relief was not complete. Three others were moderately relieved, and one failed to show improvement. The writers conclude that the risk of treatment by cortisone in this type of patient is not borne out in this experience, though we must admit that the series is but small in size. However, in refractory cases of this very trying complication of an already worrying and potentially recurrent condition the use of cortisone seems to be justified.

NEW ZEALAND AND THYROID DISEASE.

THYROID DISEASE, particularly endemic goitre, is relatively common in New Zealand, and Sir Charles Hercus, Dean of the Medical School of the University of Otago, has for many years been interested in it, making notable contributions to its understanding. Naturally enough he chose it for his subject when he delivered the Banting Memorial Lecture at Toronto, Canada, last year.[1] By way of introduction he rather diffidently reminded his audience of the exact location of New Zealand, pointing out that it was "not part of the great Australian continent". The information, obvious enough to us, was no doubt necessary to clear away any wisps of geographical fog in the minds of his Northern Hemisphere listeners, but it also served to emphasize a significant scientific point—the fallacy that sea air supplies adequate iodine for the needs of the thyroid gland. Our twin-island sister Dominion, set in the Earth's largest ocean, has no point more than 100 miles from the sea; yet endemic goitre is widely prevalent in the country as a whole, affecting both Maoris and Europeans, and was apparently there before the Europeans came. Extensive surveys carried out over the past forty years have shown its widespread incidence in male and female members of all sections of the community and at all ages. However, it is interesting to note that in no part of the country has the severity of the endemic been such as to lead to endemic cretinism. Discussing the fallacy of iodine in sea air, Sir Charles Hercus states that sea air at the most can supply not more than three to four microgrammes of iodine daily, an amount of little significance in an environment deficient in iodine. Sea water itself has a comparatively low iodine content; the important factor is concentration of iodine by marine plant life, and even then its availability is limited. The phytoplankton, rich in iodine, sinks to the floor of the ocean and serves as food for invertebrates which in turn supply food (and so iodine) to the bottom-feeding fishes. Only these bottom-feeding fishes or those feeding on seaweed have a high iodine content in their flesh. Fishes therefore are not necessarily a rich source of this element. Seaweed is a much richer and more dependable source; any species is at least a thousand times richer in iodine than any other food. Unhappily, Sir Charles Hercus comments, the average New Zealander, unlike the ancient Greek, does not eat seaweed, and his consumption of iodine-rich fishes is limited by both availability and cost. Investigations in New Zealand, or elsewhere, have shown a striking inverse relationship between iodine intake in the diet and goitre incidence, confirming the century-old theory of Chatin that endemic goitre is the result of iodine deficiency. Sir Charles Hercus also describes the work done over the past twenty-five years on goitrogenic factors present in certain plants, work to which notable contributions have been made by New Zealand workers including Hercus himself; it has led into some interesting bypaths in relation to hyperthyroidism and thyroid neoplasms, but need not detain us at present. From the immediate practical viewpoint the use of iodized salt in New Zealand has coincided with a decline in the incidence of thyroid enlargement in school children. A recommendation was made by the Thyroid Research Committee of the New Zealand Medical Research Council that iodized salt should become the standard domestic salt of New Zealand, but at the time when Sir Charles Hercus delivered his lecture the recommendation had not been adopted. Its scientific validity would seem to be beyond question, but no doubt other considerations affect the adoption of such a policy.

[1] *Canad. M. A. J.*, June, 1953.

MEASLES ENCEPHALOMYELITIS.

IN the past the most important complication of measles was pneumonia, which was responsible for the great majority of deaths. The antibiotics have altered this, and neurological complications have gained in relative importance. The most serious of these, encephalomyelitis, varies greatly in incidence from epidemic to epidemic; but when it does occur, it may result in prolonged serious illness, permanent neurological damage and death. Most authorities quote a mortality rate from encephalomyelitis of about 10%, but in a series collected in Milwaukee over a period of twenty-five years and recently reported by M. J. Fox, J. F. Kuzma and J. D. Stuhler,[1] the rate was much higher. Of a total of 77 patients, varying in age from five months to thirty-two years, 22 died, though it is to be noted that two-thirds of the deaths occurred among patients in the fifth, sixth and seventh years of life. Of the 55 patients who survived, 36 answered a follow-up inquiry; 22 had recovered completely, the others had various neurological and mental sequelæ. Among these sequelæ was epilepsy in one instance and poor coordination in another. One patient had persistent tremor involving the extremities. Three patients were mentally defective and six showed personality changes.

Fox, Kuzma and Stuhler bring out certain points in their paper that are of particular interest. First, they believe that one of the earliest signs of the onset of measles encephalomyelitis, a sign that has previously received little emphasis, is the sudden cessation or depression of "the typical measles cough". This finding was very common in the series studied. It is pointed out that the cough reflex depends upon stimuli from the respiratory epithelium passing along the afferent fibres of the vagus nerve through the nucleus of the *tractus solitarius* and thence along descending fibres to the spinal primary motor neurons, with final discharge to the diaphragm, the intercostal and abdominal muscles and the glottis. In measles encephalomyelitis involvement of the *tractus solitarius* will break this reflex arc, with sudden cessation of coughing. Fox, Kuzma and Stuhler state that this sign during the active phase of measles should warn the observer of impending encephalomyelitis when reinforced with other signs of cerebral or spinal involvement. Their second point is one of emphasis on avoiding medication containing codeine to depress the cough of measles. They refer to cases of codeine intoxication met with by them in the past two years; the patients were admitted to hospital, supposedly suffering from measles encephalomyelitis, their symptoms being convulsions, lethargy, vomiting, neck rigidity, cyanosis and fever. In each instance the spinal fluid findings were normal, and the patient recovered completely within twenty-four hours after oxygen and helium therapy was instituted. It is considered that anoxia following the prolonged administration of codeine may well have been a factor in the production of the symptoms. So far as general treatment is concerned, nothing particularly new arises from the study. The approach remains largely on symptomatic lines. The results of treatment with convalescent serum indicated that its value was questionable. On the other hand, good supportive therapy and nursing care would appear to be essential to the welfare of the patient and to affect the ultimate mortality from measles encephalomyelitis.

[1] *Am. J. Dis. Child.*, April, 1953.

Abstracts from Medical Literature.

RADIOLOGY.

Intrathoracic Goitre.

G. ANSELL (*J. Fac. Radiol.*, January, 1953) discusses the clinical and radiological features of intrathoracic goitre. Fifteen patients who were suspected of having intrathoracic goitres were investigated by the use of radioactive iodine. The method used is to administer orally to the patient a tracer dose of radioactive iodine; twenty-four hours later, measurements of radioactivity are made by scanning the neck and chest with a specially collimated Geiger-Müller counter. Each position of the counter is marked by placing a numbered circle of adhesive plaster on the skin. A one inch square lead marker is also fixed to the chest wall; and when the measurements have been completed, the patient's chest is photographed. A chest radiograph is also taken with the marker in position. The radioactivity, as shown by the number of counts per unit time interval, is written into the circles on the photograph, and a radioactive contour is then drawn showing the outline of the functioning thyroid tissue. The presence of the lead marker allows the radioactive contour shown on the photograph to be correlated with the radiograph. It is concluded that radioactive iodine is of value in helping to differentiate intrathoracic goitre from other lesions of the mediastinum. The demonstration of radioactive iodine-concentrating tissue in the chest provides definite evidence of an intrathoracic thyroid. The absence of such a concentration makes the diagnosis of intrathoracic goitre less likely, but does not exclude this possibility entirely. Those intrathoracic goitres which do not collect radioactive iodine are likely to be the site of extensive necrotic, cystic or malignant change.

Coarctation of the Aorta.

AN editorial article article (*Am. J. Roentgenol.*, May, 1953) calls attention to a valuable but neglected radiographic sign of aortic coarctation. As is well known to all radiologists, if a postero-anterior radiograph of the thorax is properly exposed, the descending aorta can be well visualized, and normally if the left border of this vessel is traced proximally from below it will be seen to sweep gently into the left margin of the aortic arch. In almost 40% of cases of coarctation of the aorta, it can be seen that this border does not sweep gently into the aortic knob when the latter can be well distinguished, but that before this line joins the region of the aortic knob, an indentation toward the right is noted just above the level of the left main pulmonary artery. This indentation may be very slight or may be so marked as to give an overlapping double contour. The degree to which this indentation can be seen depends on the following factors: (i) The proximity of the origin of the left subclavian artery to the coarctation. When the left subclavian artery arises close to the coarctate segment, it probably represents the upper curve of double contour, and the more dilated the artery is, the more prominent this segment will be. (ii) The size of the aortic knob in those cases in which the left subclavian artery originates at some distance from the coarctate segment. (iii) The shortness of the pulmonary ligament and the amount of pull it exerts on the coarctate segment. (iv) The extent of the circumference of the aorta involved by the coarctate segment, and at what tangent and vertical angle the X rays strike the region of the superior mediastinum, and the variation of position of the involved structures from one patient to another. (v) The size of the lumen of the post-stenotic descending aorta.

Overhanging Fillings.

A. PORTER SWEET (*Dent. Radiography & Photography*, Volume XXVI, 1953) states that overhanging fillings present a real threat to the patient, in that almost 80% will probably cause bone resorption. A tooth with an overhanging filling stands about a fifty-fifty chance of developing decay because of surplus. Whatever their sizes, overhanging fillings are a threat to the health of adjacent bone and adjoining tooth structure and should be avoided by routine checking of the fit or fillings at the gingivæ with a radiograph and removal of any surplus. It is not enough merely to take a radiograph of a newly inserted filling. In addition, each radiograph should be examined with a magnifying glass.

Pulmonary Embolism.

M. E. WOESSNER, G. A. GARDNER AND W. L. STILSON (*Am. J. Roentgenol.*, March, 1953) state that massive pulmonary thrombosis following embolus without or with minimal infarction is possible. One additional case is reported. The radiological findings in this case are similar to those recently reported by other investigators, and are as follows: (*a*) segmental increased radiability of the lung; (*b*) abrupt termination of the major arterial branches at the site of embolus; (*c*) relative absence of vascular pattern in the involved area; (*d*) dilatation of the main pulmonary artery or arteries proximal to the embolus. It is considered that previous embarrassment of the cardio-vascular system is necessary for pulmonary occlusion to produce infarction.

Late Effects of "Thorotrast" in Tissues.

A. P. PRESYNA, W. W. AYRES AND W. C. MULRY (*Radiology*, April, 1953) state that the injection of "Thorotrast" is responsible for serious disease, which is often late in appearance. The continued increasing radioactivity due to the breakdown of thorium dioxide is responsible for these effects. The total radioactivity of thorium dioxide solution decreases over a period of five years and then begins to rise, owing to the fact that sufficient radiothorium has broken down to form other members of this radioactive family which are strong α emitters. The resultant total radioactivity after ten years is 54% of the activity of an original solution. This activity continues to increase, reaching its peak in the next fifteen years. This seems to explain why in some instances serious complications develop after a latent period of a decade or more. For the most part the radioactive material is retained in the cells of the reticulo-endothelial system. The commonest complications are due to its accidental perivascular deposition, leading to destruction and scarring of the surrounding tissues. Rarely, its concentration within the reticulo-endothelial system results in aplastic anæmia or in the formation of malignant neoplasms.

Reduction of Ileo-Caecal Intussusception by Hydrostatic Pressure.

B. R. GIRDANY, L. W. BASS AND G. W. GRIER (*Radiology*, April, 1953) state that hydrostatic pressure by barium enema, properly used, is the treatment of choice of ileo-caecal intussusception in infants and young children. The limitations of its use are not defined; results suggest that long duration of symptoms does not necessarily contraindicate first attempts at reduction by hydrostatic pressure. A technique of immobilization and enema administration is described. In two years, 27 patients have been treated. In 22, complete reduction was obtained. In three instances of ileo-caecal intussusception, reduction had to be completed surgically.

Blastomycosis and Actinomycosis of the Spine.

G. J. BAYLIN AND J. M. WEAR (*Am. J. Roentgenol.*, March, 1953) state that blastomycosis of the spine mimics tuberculosis very closely while actinomycosis usually produces a very different radiographic pattern. Blastomycosis invariably produces abnormalities in the disk space, and narrowing is the usual change. Also it produces changes in one or more spinal segments, and vertebral body collapse is common. Bone destruction is predominant, and there is little proliferative reaction for relatively long periods of time. As in tuberculosis, the infection spreads from segment to segment by dissecting under the spinal ligaments, especially anteriorly. Because of the latter mode of extension the disease frequently results in prominent concavities of the anterior vertebral borders, a finding characteristic of tuberculous spondylitis. Also, this manner of spread accounts for the "skip" involvement of segments, for the dissecting pus may by-pass one or more vertebræ only to involve others. Rib destruction either by direct extension or by pressure erosion is a frequent finding. Here, again, there is a tendency towards very slow bone proliferation and sclerosis. Paravertebral infection almost always accompanies the bone disease, and the radiographic picture is that of either a fusiform or a globular shadow at single or multiple levels. The abscess may be unilateral, but most often is bilateral. In the lumbar region spread into the psoas area is common and is associated with the usual radiographic finding of psoas shadow bulging. Actinomycosis produces two forms of spondylitis: (*a*) primary or intrinsic; (*b*) secondary or extrinsic. This primary spondylitis in the vertebra produces an unusual change. The bone, when radiologically examined, has a soap-bubble appearance. The pattern is one of multiple small areas of rarefaction surrounded throughout by zones of normal or dense bone. Collapse of the vertebral body is not particularly pronounced, and there may be little change in the contour for long periods of time. Paravertebral soft-tissue swelling is usually

present, extending along the course of the involved segments and even beyond. Most often this is of a fusiform nature and not very conspicuous. The secondary type occurs as a consequence of intraabdominal infection. Thus, after actinomycotic appendicitis, the psoas may become involved and the infection spread to reach the lateral borders of the lumbar vertebræ. The changes produced are very distinctive. The bone reaction is one of intense sclerosis. Dense, long spurs are formed, and they usually run longitudinally, bridging the vertebræ. The spurs do not project very far laterally, and thereby are somewhat different from those seen after trauma or localized pyogenic disease. Another distinctive feature of this so-called extrinsic or secondary vertebral actinomycosis is the presence of dense, eburnizing bone changes that extend from the lateral vertebral border into the body itself. The sclerosis extends for variable distances into the body, obliterating the fine trabecular pattern and replacing it with rather homogeneously dense bone. Any element of bone destruction which may be present is completely overshadowed by the proliferative changes. Collapse of the involved vertebral bodies is infrequent. The disk spaces are moderately narrowed, but herniation of disk nuclei into the vertebral plates is unusual. Thus, it would seem that the infection does not in any way weaken the bodies, and it may actually result in structural stability.

Radiology of Kerosene Poisoning.

J. GERSHON-COHEN, L. S. BRINGHURST AND R. N. BYRNE (*Am. J. Roentgenol.*, April, 1953) present four cases of poisoning in infants following ingestion of kerosene. The radiographic changes produced in the lungs usually comprise bilateral uniformly disseminated bronchopneumonitis, which clears within one to three weeks and is usually preceded by clinical cure. Complications such as pleurisy, emphysema and lobar pneumonia are rare and are seldom seen except in the fatal cases, variously estimated as from 2% to 10%.

PHYSICAL THERAPY.

Malignant Lesions of the Tonsil.

D. B. PARSHALL AND K. W. STENSTROM (*Radiology*, April, 1953) review a series of 103 cases of malignant disease of the tonsil at the University of Minnesota Hospital, from 1926 to 1950. It was observed that the growths were insidious in onset, and in 46% of cases the first symptom was a mass in the neck. Discovery of the tonsillar lesion as a first symptom was infrequent, occurring in only 9% of cases. The average age of incidence was 62·9 years, the greatest number of lesions occurring in the seventh or eighth decade. Malignant disease of the tonsil is considered best treated by radiotherapy—external irradiation, teleradium, interstitial radiation or a combination of these methods—although surgery may be required for radical neck dissection, if the primary lesion is controlled. The histology of the tumour is of extreme prognostic importance, as there is a great difference in survival rates between carcinoma, lymphosarcoma and lymphoepithelioma. However, the authors use the same technique of treatment for all types of tumour. The necessity for a high tumour dose is stressed, and this is a severe strain on the patient. Measures designed to maintain the strength of the patient and prevent complications are as follows: insistence on an adequate intake of food or fluid; the use of antibiotics to control infection; removal of teeth from areas which are to be irradiated. Among complications following treatment are the usual dry mouth, hæmorrhage from the tumour site, and in two cases radionecrosis of the mandible. The five-year survival rate was 28%.

The Anginal Syndrome.

V. L. LOVE AND H. D. FEARON (*Am. J. Roentgenol.*, September, 1952) present a study of a controlled experiment to determine the effectiveness on the anginal syndrome of radiation therapy to the cervico-dorsal part of the spine. Previous reports from 1928 had indicated that considerable relief of pain in *angina pectoris* could be obtained by irradiation. In this experiment 22 consecutive patients from the cardiac clinic were taken. Half of these received irradiation to the cervico-dorsal part of the spine. In the other half, a lead filter was inserted between the patient and the tube, so that no X rays reached the skin. At the end of the series (an average of five and a quarter months) the results were assessed on the diminution in frequency or severity of attacks of pain, and on the reduction in number of nitroglycerin tablets taken. Of the 20 patients who were followed up, 11 were said to be improved, and of these five had received no irradiation. Electrocardiograms were also taken at the completion of treatment, and there was little difference between treated and untreated patients. Improvement occurred equally in both groups. It is concluded from this experiment that cervico-dorsal irradiation as such has no effect upon the anginal syndrome, and such improvement as occurs is probably due to suggestion, which has lessened emotional and nervous stress.

Teletherapy with Various Radioactive Sources.

AN editorial article (*Am. J. Roentgenol.*, January, 1953) states that γ-ray beam therapy with radium as the emitting source has been used for many years. The first units contained from one to five grammes of radium, and protection was provided by means of lead and tungsten alloys. Because of the low intensity of the γ-ray beam, treatment had to be applied at close range (rarely exceeding eight centimetres), and treatment times were long. Lately, more radium has been available. Several 10-gramme units have been constructed and two 50-gramme units. The development of nuclear reactors has resulted in the gradual availability for medical purposes of a variety of artificial radioactive substances. This has led to two definite trends in the development of γ-ray beam therapy. The first is to utilize artificial radioactive substances in place of radium, housed in containers of conventional design and working at short distances. The second is to build large units which will permit γ radiation at greater distances as in supervoltage X-ray therapy. There are six practical isotopes suitable for this type of apparatus; iridium (Ir^{192}), cobalt (Co^{60}), europium ($Eu^{152-154}$), tantalum (Ta^{182}), cesium (Cs^{137}) and cerium (Ce^{144}). Of these, radio iridium and radio cobalt have been used in short-distance γ-ray therapy. The first installed was at Addenbrooke's Hospital, Cambridge. This was a 20-curie radio iridium unit working at a distance of eight centimetres. The γ-ray beam emitted had a quality of radiation equivalent to an 800 kilovolt apparatus. The iridium source has to be changed each month because of the short half-life. In the devising of units for therapy at greater distance, best results have been obtained with radio cobalt. This element has a half-life of 5·3 years. The first unit was installed at Saskatoon in 1951, the source being 1000 curies. It is believed that radio cesium may prove to be a better source. This will become available in large quantities during the next few years. The half-life is 33 years, and it emits γ radiation of 0·66 megavolt energy. It is believed that units of 2000 curies could be constructed. There will be no new biological action as far as the γ rays emitted from these units is concerned, but each unit will be able to perform the function of an X-ray apparatus, varying between 800 kilovolts (radio iridium) to 3·5 megavolts (radio cobalt) and free from many complex maintenance problems.

Hypopharyngeal Cancer.

S. HULTBERG (*Brit. J. Radiol.*, May, 1953) states that at the Radiumhemmet, hypopharyngeal carcinomata are divided into two groups. An upper group comprises carcinomata arising from the edge and anterior surface of the epiglottis, the aryepiglottic folds, the arytenoids and the pyriform fossa. The lower group comprises post-cricoid tumours, and the growths arising from the œsophageal inlet. This distinction is justified on differences in prognosis, sex distribution and predisposing factors. X-ray therapy is regarded as the treatment of choice for these growths. Every patient before treatment is subjected to a thorough examination, including the fluid balance, blood picture and determination of the serum iron content, and any abnormalities are corrected. The size, site and extent of the tumour are determined by X-ray examination, by direct and indirect laryngoscopy and by ordinary palpation. The tumour is carefully localized and marked on the skin, and a cross-section diagram is made of the neck at the level of the middle of the tumour. A cross-fire technique is used with two fields on each side of the neck, the spinal cord being avoided. This last is most important. Prior to 1943, several cases of myelodegeneration occurred; with modification of the technique none have occurred since. The aim of treatment is to deliver a tumour dose of between 5700*r* and 6200*r* in about one month, keeping the volume irradiated as low as possible. Improvement in results has been gained, too, by special attention to the patients' general condition and to the response of the tumour with individual adjustment of the final dose. Results in treatment of hypopharyngeal tumour give in general about 5% five-year cures. In this series of 322 patients, the absolute cure rate is 9·3%. However, of great importance is the fact that the cure rate is rising. Of patients treated between 1943 and 1947, 14·5% were free of disease at five years, compared with 7% of those treated between 1939 and 1942.

Special Articles for the Clinician.

(CONTRIBUTED BY REQUEST.)

LXXVI.
MEASLES (MORBILLI).

MEASLES is an acute infectious disease belonging to the group known as "the acute exanthemata", in each of which there appears an eruption or rash on the skin which is more or less typical of the particular disease.

After an incubation period of about ten to twelve days the highly infectious catarrhal stage commences, the signs and symptoms being chiefly those of a common cold. The catarrhal symptoms commence about three to four days before the appearance of the typical rash. In a high proportion of cases the internal rash or "enanthem" can be recognized on the mucosal surfaces one or two days before the external rash or "exanthem".

Bacteriological Considerations.

Measles is caused by a filterable virus which is present in the nasal secretions during the early stages of the disease. Besides being the cause of the typical rash, it appears to render the mucosa of the respiratory and gastro-intestinal tract more susceptible to secondary bacterial invaders. In addition the virus may cause encephalitis or encephalomyelitis either *per se* or by the activation of an existing virus.

Clinical Features.

The incubation period and the onset of symptoms present a fairly consistent time-table. On the tenth or eleventh day after contact the initial fever, accompanied by drowsiness and anorexia, is evident. The early catarrhal symptoms follow closely, and on the second day Koplik's spots are usually visible. Sneezing, coughing and redness of eyes increase in severity up to the third or fourth day of illness. Just before the first signs of the exanthem, reddened blotches are seen on the palate. On the third or fourth day of illness—that is, about fourteen days after contact—the rash appears on the neck below the lobe of the ear. In a few hours blotches appear on the face and a scattered maculo-papular rash develops on the trunk, the individual lesions being two or three inches apart. At this stage the sparseness of the rash on the trunk gives little indication of the extent or severity of the rash which will develop fully in the next twenty-four hours. It is characteristic that the rash on the face matures more quickly, and fades sooner than the rash on the trunk. The typical lesions consist of slightly raised red or reddish-purple spots varying a great deal in shape. They are round, oval or irregular, and are usually about one-eighth of an inch in diameter. The spots tend to coalesce in some areas forming continuous large patches especially on the face. The face has a bleary, puffy appearance, and with the marked catarrhal signs the patient looks utterly miserable. As the rash fades it often leaves a purple bluish staining, which may last for several days or even weeks, and is often of significant retrospective value in diagnosis.

On the third, fourth and fifth days of illness—that is, at the height of the exanthem—the fever is high, the temperature often reaching 104° F. The catarrhal symptoms are as a rule severe, including a constant cough and considerable watery rhinorrhœa. In an uncomplicated case, by the sixth to seventh day of illness—that is, about two or three days after the appearance of the rash—the fever is subsiding, the exanthem is fading, the catarrhal symptoms are gone or nearly gone, the patient's general condition is improving and the patient is more comfortable.

Koplik's spots are of considerable aid to diagnosis in the early and most infectious stage of the disease and therefore demand a more detailed description. They are minute pin-point white spots on a red base, occurring all over the inside of the cheeks, but particularly in the region of the gum margins and in the neighbourhood of Stensen's duct. With the appearance of the exanthem the Koplik's spots fade into a general redness of the mucous surfaces. In very young children the true Koplik's spots are sometimes obscured by a fine pultaceous deposit, a powdery effect being produced particularly in the folds near the gum margins. This powdering of the buccal mucosa is peculiarly characteristic of measles.

It is important to note that in some cases the tongue may peel and become smooth and red as in scarlet fever. In addition the skin in the stage of defervescence of the rash may show branny desquamation. The presence of catarrhal signs with cough and coryza, and in addition the staining of the skin, usually differentiate the two diseases.

Variations in the Rash.

Modified attacks of measles occur either naturally or after the use of seroprophylaxis. The lesions are maculo-papular, but remain small and scattered with little tendency to spread. The colour of the lesions is usually pale pink instead of the robust red of ordinary measles.

Hæmorrhagic measles is a rare disease. In addition to the typical morbilliform rash, petechiæ and ecchymoses are present and are accompanied by hæmorrhages into the mucous surfaces. The pigmentation or staining which follows a severe exanthem is often mistaken for hæmorrhagic measles. However, it occurs in the stage of defervesence when the temperature is falling. Prodromal rashes are uncommon. A faint morbilliform rash may occur two or three days before the true exanthem appears.

Differential Diagnosis.

Rubella, Scarlet Fever and Smallpox.

Rubella may be mistaken for measles. The rubella rash consists of smaller discrete macules closer together than those of measles. The lesions are a lighter pink in colour and fade quickly. Catarrhal symptoms are mild or absent. Posterior cervical lymph glands are usually enlarged and tender in rubella, only occasionally so in measles. The rash of scarlet fever is sometimes blotchy like that of measles on the limbs, but the absence of catarrhal signs and the fine, closely packed punctate rash on the body should differentiate the two conditions.

The early stages of smallpox may cause some difficulty when maculo-papules first appear on the forehead before the development of vesicles. Koplik's spots may provide the clue, but the appropriate laboratory procedures to diagnose smallpox may be necessary.

Drug Rashes.

The morbilliform rash caused by sulphonamides may simulate measles. If the sulphonamides have been given for a catarrhal or bronchitic infection and a cough is already present, it may be difficult to exclude measles.

Complications.

Laryngitis.

Hoarseness, croupy cough and even signs of laryngeal obstruction are not uncommon in the pre-eruptive stage, and are due to the enanthem. Severe obstructive symptoms are uncommon. However, the late laryngitis of measles, when signs of laryngeal obstruction occur two or three days after the appearance of the rash, is invariably due to secondary invaders—usually the staphylococcus. The possibility of laryngeal diphtheria must always be borne in mind. The exhibition of diphtheria antitoxin, penicillin or one of the broad-spectrum antibiotics should be an urgent matter.

Bronchopneumonia.

Bronchopneumonia is still the outstanding complication of measles. Fortunately the response to chemotherapy is invariably good.

Gastro-Enteritis.

Infection by Salmonella and dysentery organisms is not an uncommon complication.

Central Nervous System Involvement.

Encephalomyelitis has been estimated to occur in about 0·4% of cases, with a fatality rate of 10%.

The onset is as a rule sudden, the condition occurring four to five days after the appearance of the rash and when the temperature has returned to normal. Common findings are headache, vomiting, convulsions followed in many cases by delirium and coma, pronounced head retraction and even opisthotonos. The attack may terminate completely after a few days of unconsciousness, or may persist and leave some permanent residual damage to the nervous system.

Mild attacks consist of the onset of irritability and mild mental confusion which may persist only for a few days. Pleocytosis in the cerebro-spinal fluid is a usual but not constant finding.

Ear Infections.

Otitis media et cetera are due to secondary invaders and respond well to chemotherapy.

Eye Infections.

Conjunctivitis is a usual prodromal sign. However, the most dangerous eye complication is corneal ulceration. Expert ophthalmic advice should be sought immediately.

Period of Infectivity.

On the average a patient is infectious for three or four days before the exanthem appears and probably for two or three days after it has appeared. Staining, cough and other symptoms may persist after the rash has faded, but the patient is not then infective. Direct contact is usually necessary for infection, but the virus can be carried on inanimate objects if transmission of those objects is immediate and direct.

Prevention of Measles: Seroprophylaxis.

Blood taken from a patient who has recently recovered from measles contains antibodies to measles virus, and the serum of this patient can be used in the prevention of measles. It is of no use in the treatment of measles. The blood of most adults also contains this antibody, and the mixed collected blood from a number of adults is used in the preparation of "adult pooled serum". In addition a method of concentrating the antibodies by processing the serum and obtaining the γ globulin fraction of the serum has made possible a third preparation. The following dosages of the three preparations are recommended for children up to the age of ten years:

In the first three days after contact, one of the following will in most cases prevent the attack, but with only temporary or passive immunity: (*a*) the intramuscular administration of 20 millilitres of adult pooled serum; (*b*) the intramuscular administration of five to 10 millilitres of convalescent serum; (*c*) the intramuscular administration of two to four millilitres of the γ globulin fraction of convalescent serum. Alternatively, the same dosages given on the fifth, sixth, seventh or eight days after contact—that is, (*a*) 20 millilitres of adult pooled serum, or (*b*) five to ten millilitres of convalescent serum, or (*c*) two to four millilitres of the γ globulin fraction of convalescent serum—will in most cases produce a mild or modified attack of the disease.

It is open to question whether it is necessary to use seroprophylaxis in measles. Modern antibiotics control the more serious complications to such an extent that it is rare for a child to become dangerously ill.

Measles convalescent γ globulin is not available in Australia, and to obtain the desired effect from other preparations demands a painful injection of a large amount of serum. However, it may be considered desirable to produce a modified or attenuated attack of measles in the case of a young child who is weakly or convalescing from a serious illness, or who is subject to bronchitis. The resultant active immunity would be sufficient justification for the action taken. However, it is only in rare circumstances that it would be considered necessary to produce complete prevention of the attack by conferring a passive immunity of only a few weeks' duration.

H. McLORINAN,
Melbourne.

British Medical Association News.

ANNUAL MEETING.

THE annual meeting of the South Australian Branch of the British Medical Association was held at the Verco Theatre, Institute of Medical and Veterinary Science, Adelaide, on June 24, 1953, DR. B. S. HANSON, the President, in the chair.

ANNUAL REPORT OF THE COUNCIL.

The annual report of the Council was received and adopted on the motion of Dr. R. H. Hamilton, seconded by Dr. L. A. Wilson. The report is as follows.

At the annual general meeting of members of the Branch, held on June 25, 1952, the following officers and members of Council were duly elected:

President: Dr. B. S. Hanson.

Vice-President: Dr. Sholto J. Douglas.

Honorary Treasurer: Dr. F. L. Wall.

Honorary Medical Secretary: Dr. Roger Angove.

Ordinary Members of Council: Group A—Dr. Edward P. Cherry, Dr. H. G. Prest, Dr. E. L. Symons. Group B—Dr. J. H. Nicholls.

At the first Council meeting of the new year, held on July 3, 1952, the following subcommittees were appointed:

Scientific: Dr. H. A. Goode and Dr. E. L. Symons.

Contract Practice: Dr. C. O. F. Rieger, Dr. L. R. Mallen, Dr. J. D. Fotheringham, Dr. H. A. Goode and Dr. H. G. Prest.

Ethics: Dr. C. O. F. Rieger, Dr. F. L. Wall, Dr. S. J. Douglas, Dr. J. D. Fotheringham, Dr. E. P. Cherry and Dr. R. L. T. Grant.

Parliamentary Bills: Dr. L. R. Mallen and Dr. C. O. F. Rieger.

Publicity: Dr. E. L. Symons and Dr. L. R. Mallen.

Library: Dr. R. H. von der Borch, Dr. E. P. Cherry and Dr. J. M. Dwyer.

Salaries: Dr. L. R. Mallen, Dr. C. O. F. Rieger and Dr. H. C. Prest.

Editorial Committee: Dr. C. O. F. Rieger, Dr. E. F. Gartrell and Dr. L. R. Mallen.

Medico-Pharmaceutical Liaison Committee: Dr. R. L. T. Grant, Dr. H. A. Goode, Dr. R. Angove and Dr. C. O. F. Rieger.

Tuberculosis Standing Committee: Dr. D. R. W. Cowan, Dr. J. L. Hayward, Dr. K. S. Hetzel, Dr. H. D. Sutherland, Dr. J. G. Sleeman and Dr. P. S. Woodruff.

Note: The president, immediate past president (if any), the vice-president or vice-presidents, the honorary treasurer and the honorary medical secretary are ex-officio members of all committees other than the ethics and standing committees.

The president and the honorary medical secretary are ex-officio members of the Ethics Committee and of all standing committees.

Attendances at Council and Committee Meetings.

The attendances at Council and committee meetings were as set out in table below.

Dr. J. M. Dwyer attended the two meetings of the Library Committee held since July 1, 1952, as one of the representatives of the Council.

Dr. W. M. Irwin attended ten meetings of the Council as the local representative of THE MEDICAL JOURNAL OF AUSTRALIA.

Dr. E. F. Gartrell attended four meetings of the Editorial (Handbook) Subcommittee.

Monthly Scientific Meetings.

Ten scientific meetings have been held up to June 18, 1953, the following programme being carried out:

1952.—July 31: Paper by Dr. Charleton Yeatman, "Upper Abdominal Pain in General Practice". September 25: Lecture by Dr. Avery Jones, of London, entitled "Gastric and Duodenal Ulcer". October 30: Lecture by Dr. Dennis Brinton, of London, entitled "Neurological Complications of Protrusion of Cervical Intervertebral Disks". November 27: Symposium on anæsthetics in general practice given by members of the Anæsthetics Section. December 11: Clinical meeting at Adelaide Children's Hospital.

1953.—February 26: Paper by Dr. R. F. Matters on the subject of "Early Diagnosis of Carcinoma of the Cervix Uteri". March 26: Clinical meeting held at the Repatriation General Hospital, Springbank. April 30: Listerian Oration delivered by Dr. H. Boyd Graham, of Melbourne. May 28: Paper by Dr. F. H. Beare, "Tetanus". June 18: Paper by Dr. Ian Hamilton, "Modern Treatment of Prostatomegaly".

Arrangements were also made for two prominent overseas lecturers to address members during their stay in Adelaide, namely, Dr. Robert Forgan, who delivered an address on February 18, 1953, on the subject of "Recent Advances in Therapeutics", and Dr. J. Stanley White, who gave a short address on February 24, 1953, entitled "Forty Years of Medicine".

In addition to the above, members were invited to meetings of the Australian Association of Psychiatrists held through-

ATTENDANCES AT COUNCIL AND COMMITTEE MEETINGS.

	Council.	Scientific.	Ethics.	Editorial.	Contract Practice.	Library.
ANGOVE, R. C.	10	1	1	4	1	—
CHERRY, E. P.	11	—	1	—	—	2
DOUGLAS, S. J.	12	—	2	4	1	—
FOTHERINGHAM, J. D.	12	—	2	—	—	—
GOODE, H. A.	9	—	—	—	1	—
GRANT, R. L. THOROLD	12	1	2	4	1	—
HANSON, B. S.	12	1	2	5	1	—
MALLEN, L. R.	11	—	—	—	—	—
NICHOLLS, J. H.	10	—	—	—	—	—
PREST, H. G.	11	—	—	—	—	—
RIEGER, C. O. F.	12	—	2	4	1	—
ROWE, A. G.	11	—	—	—	—	—
SYMONS, E. L.	11	—	—	—	—	—
VON DER BORCH, R. H.	10	—	—	—	—	—
WALL, F. L.	11	1	2	4	1	—
Meetings held up to May 7, 1953	12	1	2	5	1	2

out the year, the annual meeting of the Australian Society of Anæsthetists, and to a lecture given by Mr. K. W. Starr at the annual meeting of the Royal Australasian College of Surgeons, held on May 15, 1953.

Membership.

The membership of the Branch is now 733, and the number of student associate members 51.

It is with regret that the deaths of the following members are recorded: Dr. J. R. Cornish, Dr. J. E. Everard, Dr. C. Bollen, Dr. A. G. Schroeder, Sir Trent Champion de Crespigny, Dr. O. E. Nichterlein, Dr. S. E. Holder and Dr. G. E. Aitken.

Representation.

Medical Board of South Australia.—Sir Edmund Britten Jones (Chairman).

Dental Board of South Australia.—Dr. W. John Close.

Flying Doctor Service of Australia, South Australian Section.—Dr. J. M. Dwyer (President).

Federal Council of the British Medical Association in Australia.—Dr. L. R. Mallen and Dr. C. O. F. Rieger.

Federal Medical War Relief Fund (the Local Committee of Management for South Australia).—Sir Henry S. Newland, Dr. Brian H. Swift and Dr. E. F. West.

Saint John Ambulance Association.—Dr. H. H. Hurst.

Local Representative of "The Medical Journal of Australia".—Dr. W. M. Irwin.

British Medical Hall Company, Limited.—Dr. C. O. F. Rieger and Dr. F. L. Wall.

Mothers and Babies' Health Association.—Dr. R. N. C. Bickford.

Certifying Medical Practitioner Under Part IX of the Workmen's Compensation Act.—Dr. M. Erichsen and Dr. C. H. Schafer.

Advisory Council on Health and Medical Services.—Dr. L. R. Mallen.

Nurses' Board of South Australia.—Dr. G. H. Burnell.

University Post-Graduate Committee in Medicine.—Dr. L. R. Mallen, Dr. R. C. Angove, and the President *ex officio*.

Representative on Central Council of the Association, London.—Dr. Myles Formby.

Chiropody Board of South Australia.—Dr. Neville P. Wilson.

Florence Nightingale Memorial Committee.—Dr. Mary Burnell and Dr. Barbara Russell.

Branch Representation on Membership of the Australasian Medical Publishing Company, Limited.—Sir Henry S. Newland (Chairman), Dr. L. R. Mallen and Dr. C. O. F. Rieger.

World Medical Association.—Dr. L. R. Mallen.

Delegate to Annual Meeting of the Association at the Annual Representative Meeting (Cardiff, July, 1953).—Sir Edmund Britten Jones.

Section of Anæsthetics.

The annual report of the Section for 1952-1953 states:

During the past twelve months the Section has been active, holding seven meetings and arranging the annual general meeting of the Australian Society of Anæsthetists in Adelaide this April. The death of Dr. J. R. Cornish has been a loss to the Section. Six new members have joined during the year. The meetings were as follows:

1952.—April: Mr. Ian Hamilton gave a talk on his visit to Great Britain, and on anæsthetic practice as he saw it from a surgeon's point of view. June: Dr. Dwyer discussed autopsy findings in death relating to anæsthetics. August: Resuscitative methods were the subject of general discussion led by Dr. Gilbert Brown. The Holger-Nielson (arm-lift) technique and others were practised by members. Pole-top resuscitation was also mentioned. October and December meetings were addressed by Dr. Mary Burnell on her recent trip to the United States of America and Great Britain, and were of great interest.

1953.—January: Discussion of arrangements for Australian Society of Anæsthetists meeting in Adelaide in April. Welcome visitors were Dr. D. Renton (Melbourne), who showed us his bellows inflating machine, and Dr. Kirk Godfrey (Perth). March: Annual general meeting. The previous office holders were reelected, namely: Chairwoman, Dr. A. W. Wall; Vice-Chairman, Dr. J. E. Barker; Secretary-Treasurer, Dr. H. J. Ellis. April: Members were fully occupied with the annual meeting of the Australian Society of Anæsthetists. Dr. Mary Burnell became the first woman federal president. Twenty-two interstate visitors attended, also Dr. Bernard Johnson, Dean of the Faculty of Anæsthetists of the Royal College of Surgeons of England, Professor Virginia Apgar, from New York, and Dr. Donalda Huggins, from Canada. Papers were delivered by Dr. H. J. Ellis, Dr. Virginia Apgar, Dr. Norman James, Dr. Brian O'Shea, Dr. Bernard Johnson, Dr. L. G. B. Cumpston and Dr. R. B. Speirs.

Ear, Nose and Throat Section.

The inaugural meeting was held on Tuesday, March 11, 1952. The proposed rules were adopted subject to approval being given by the Council of the Branch, which was later done.

The following officers were appointed: Chairman, Dr. R. M. Glynn; Vice-Chairman, Dr. R. H. von der Borch; Committeeman, Dr. A. S. deB. Cocks; Secretary and Treasurer, Dr. R. N. Reilly; Auditor, Mr. F. C. W. Dobbie.

Four ordinary general meetings were held throughout the year.

At the May meeting Dr. Pearlman read a paper on the intracranial complications of middle ear disease, the discussion being opened by Dr. H. M. Jay. Four cases were shown.

The July meeting centred around a discussion of nasal polyposis, introduced by Dr. R. H. von der Borch, who showed three illustrative cases. A full and interesting discussion followed.

A clinical meeting was held in September, at which two cases were shown and reports of three other cases presented were fully discussed by the members present.

The November meeting was mainly devoted to a discussion on the teaching of the deaf in South Australia. Dr. Reilly presented the replies received to a *questionnaire* which had been sent to the Oral School, Townsend House, the Education Department, and the Adult Deaf and Dumb Mission. In opening the discussion, Dr. Cocks gave a very full cover of the position. Then there followed a general discussion

of the several points raised in the replies. Two cases and a report of a case were also presented to the meeting.

Membership: Out of a total of eleven members the average attendance at meetings was eight.

Otolaryngological Society of Australia.

During the year South Australian members of this society, by resolution, vested in the executive of the section the power of appointing State representatives to the council of the society. Dr. Cocks resigned from this position and Dr. von der Borch was elected in his stead.

International Society for the Promotion of the Welfare of the Deaf.

Correspondence regarding the proposed formation of such a society was received from the Federal Council of the British Medical Association in Australia through the Branch Council. After communicating with the sections in the other States, it was agreed that this section should support the formation of such a society.

Section of Ophthalmology.

Seven meetings were held during the year at the rooms of Dr. R. H. Barham Black and Dr. D. O. Crompton.

The inaugural meeting was held on March 4, 1952, at which the following officers were elected: Chairman, Dr. D. O. Crompton; Vice-Chairman, Dr. S. Pearlman; Honorary Secretary and Treasurer, Dr. M. C. Moore; Committeeman, Dr. T. L. McLarty; Auditor, Mr. F. C. W. Dobbie.

One clinical case was shown.

May 6, 1952: General business discussion. Showing and discussion of two cases.

July 1, 1952: The discussion centred on the use of cortisone. Dr. K. Stuart Hetzel presented a paper on the general aspects of cortisone, its physiological effects and use in pathological states. Six cases treated with cortisone were presented by members.

September 1, 1952: Mr. John Foster, of Leeds, presented a paper entitled "The Therbrigs of Ophthalmology". This paper dealt with the time-wasting procedures in ophthalmic practice and their prevention.

Five cases were shown.

November 3, 1952: Dr. J. E. McCartney presented a paper, "The Use of Antiseptics in the Eye and the Sterilization of Instruments".

November 18, 1952: A special meeting was held at which members of the section who are also members of the Ophthalmological Society of Australia laid plans for the conference of the Ophthalmological Society of Australia to be held in Adelaide in October, 1953.

February 3, 1953: Further discussion was held on arrangements for the above conference, and seven cases were shown.

The average attendance at the above meetings was twelve.

Section of Clinical Medicine.

The report of the Section of Clinical Medicine for the year 1952-1953 states:

Membership: There are 57 members on the roll, of whom 33 were financial for the year, again slightly fewer than last year.

Officers: At the annual general meeting held on May 13, 1953, the following officers were elected: President, Dr. F. L. Wall; Honorary Secretary and Treasurer, Dr. R. A. Burston; Committee, Dr. Mark Bonnin, Dr. R. F. West, Dr. R. G. de Crespigny.

Clinical meetings: Meetings were held in the Physiotherapy Department of the Royal Adelaide Hospital on the second Tuesday of May, August and November, 1952, and February, 1953, the average attendance being 31. Following recommendation at the last annual general meeting, the method of presentation of cases was altered somewhat, but for the system adopted to function successfully it is imperative that members are present at the time of commencement of the meeting.

British Medical Association Clinical Medicine Prize: As proposed at the last annual general meeting, the value of this prize was increased to ten guineas. The prize for 1952 was won by Mr. J. P. Savage.

Northern Medical Association.

Annual Report for Year Ended June 30, 1953.

Four meetings were held during the year.

The first was at Jacka on August 3, 1952, and Dr. Stace spoke on "Modern Trends in Anæsthesia" to 18 members.

The second meeting was held at the Riverton Hospital on November 9, 1952, when Dr. O. W. Leitch spoke on "Traumatic Surgery" and 15 members were present.

The third meeting was held at Clare as a post-graduate meeting on February 15, 1952. The lecturers were Dr. E. McLaughlin ("Medical Treatment for Dyspepsia"), Dr. A. Britten Jones ("Anal Surgical Conditions") and Dr. A. S. deB. Cocks ("Everyday E.N.T."). A quiz session followed, with questions answered by the lecturers. Twelve members attended and were very grateful to all the lecturers for their help.

The fourth meeting was held at Port Pirie Hospital in May, 1953, and took the form of a clinical meeting where cases were shown by Dr. Potter (hernia), Dr. Burdon (sarcoma of scapula), Dr. Basedow (ruptured uterus), Dr. Hammill (Reiter's disease), Dr. Viner Smith (three cases of cerebral tumour) and Dr. Rowe (diphtheria).

Then followed the annual meeting, when the following officers were elected for 1953-1954: President, Dr. Wien Smith; Past President, Dr. Mallen; Vice-President, Dr. Viner Smith; Honorary Secretary, Dr. Behrndt; Committee, Dr. Potter and Dr. Holmes. Twelve members attended, and the average attendance at all meetings was fourteen.

South-Eastern Medical Association.

The annual report of the South Eastern Medical Association is as follows.

Four meetings were held during the year, namely:

1952.—July 19: Penola. A clinical meeting was followed by dinner, after which Dr. R. T. Binns gave an address on "Psychiatric Problems in General Practice".

1952.—October 18: Mount Gambier. This was the annual general meeting, when the following officers were elected: President, Dr. J. R. L. Willis; Vice-President, Dr. R. J. Salts; Honorary Secretary and Treasurer, Dr. J. H. Nicholls; Committee, Dr. M. C. Newland and Dr. N. Oldfield. A clinical meeting was followed by dinner, after which Dr. L. O. S. Poidevin gave an address on "The Difficult Forceps and its Sequelæ".

1953.—January 17: Naracoorte. A clinical meeting was held, followed by dinner. In the evening Dr. R. H. Motteram addressed the meeting on "The Significance of the Antibody in Medicine".

1953.—April 18: Mount Gambier. A clinical meeting was held, followed by dinner, after which Dr. I. B. Jose gave an address on "Recent Advances in Genito-Urinary Diagnosis". In addition, a refresher course was held at Mount Gambier on May 24, 1953. The visiting lecturers were Sir Philip Messent and Dr. E. F. Gartrell. There are twenty-four financial members of the Association, and the average attendance at the meetings has been sixteen.

Upper Murray Medical Association.

Owing to extensive flooding of the River Murray this year, and the resultant dislocation of road communication, the members have been able to meet only four times.

A post-graduate week-end was held at Loxton on July 12 and 13, 1952. Visiting lecturers were Dr. A. L. Tostevin, who dealt with ophthalmology in general practice, Dr. L. W. Linn, who dealt with treatment of skin diseases, and Dr. C. B. Sangster, who spoke on modern trends in medicine.

The next meeting was the annual general meeting, held at Loxton on January 10, 1953, when the following officers were elected: President, Dr. G. A. Hunter; Vice-President, Dr. W. J. Sleeman; Immediate Past President, Dr. D. T. M. Hayes; Secretary-Treasurer, Dr. T. G. Kohler. Each member presented a case for discussion.

The next meeting was held at Waikerie on March 14, 1953. Dr. Peter Kalinovsky spoke at length on "Medicine and Life in Russia".

A post-graduate week-end was held at Berri on May 9 and 10, 1953. Visiting lecturers were Dr. I. B. Jose, who spoke on "Surgery of the Kidney and Bladder", and following him, Professor Robson spoke on "Recent News in Medicine". Dr. L. O. S. Poidevin lectured on "Prolonged Labour". A final hour was devoted to questions and answers.

Membership of the Association is eleven, and the average attendance at meetings was nine.

Pharmaceutical Benefits Act.

Throughout the year several deletions have been made from the list of drugs available as free pharmaceutical benefits and several amendments to the regulations have brought other drugs under the provision of Regulation 14A.

All current changes in the list are notified to members of the profession by the Commonwealth Department of Health at intervals.

There has been a great deal of publicity given to the allegation that members of the profession have been using the antibiotics in the treatment of minor illnesses, thus wasting expensive drugs and encouraging the emergence of a race of disease-resistant organisms. Members have been repeatedly urged to exercise a considerable degree of caution in prescribing, and it is fitting that they should again be reminded of this.

A special general meeting of members was held on August 5 for the purpose of discussing matters arising from the prosecution of members of the medical profession for breaches of the *Pharmaceutical Benefits Act*. At this meeting members deplored the fact that despite many requests made to the Minister to provide a legal method of obtaining emergency supplies for their patients he had failed to do so. The meeting also requested the Federal Council to take appropriate action with a view to expediting the appointment of the advisory committees.

The Minister has now agreed to permit medical practitioners to requisition on their own forms for such pharmaceutical benefits for emergency use as are contained in an approved schedule list which has been drawn up by representatives of the Federal Council.

As members will also see below, the advisory committees both at State and Federal levels have now been established.

National Health Service.

The Federal Council of the British Medical Association in Australia has agreed to implement a national health service provided an Act, consolidating the pharmaceutical benefits, pensioner medical service, and the provision of medical benefits, *et cetera*, and any regulations under them, was passed before the end of the Federal Parliamentary session which is just over.

The Bill for this consolidating Act has been inspected by the State and Federal Councils and has been judged not inconsistent with the principles of the Association. For various reasons, including delays in drafting, this Bill had only reached the second reading stage, and the Act in question cannot be passed until the next session of Parliament. The Government has stated its intention of commencing the payment of medical benefits on July 1, 1953, in addition to the Pharmaceutical Benefits, Pensioner Medical Service and *Hospital Benefits Act*. The Federal Council has agreed to work temporarily under the present Acts and their regulations until a reasonable opportunity has been given Parliament to pass the consolidating Act.

Under the provisions of this Act the doctor-patient relationship is unchanged; the patient is reimbursed by both the Federal Government and the voluntary organization according to the medical service that has been rendered, the amount being calculated from schedules of rebates. Details of the technical procedures have been sent to all members in government brochures and association circulars.

The Council feels that the smooth working of this Act may have far-reaching benefits for members of the Association, and the intelligent cooperation of all members is earnestly sought.

Pensioner Medical Service.

At a special general meeting of members of the Branch, held on August 5, 1952, it was resolved:

> That this Special General Meeting of members of the South Australian Branch of the British Medical Association (Incorporated) agrees to accept fees of 9s. and 11s. respectively for services rendered under the provisions of the Pensioner Medical Service for a term of two years as from January 1, 1952.

The principle of an increase in the fees for attendance on persons entitled to receive the benefits of a concessional service under the provisions of the pensioner medical service was conceded by the Minister at a conference with representatives of the Federal Council held at Hobart in February, 1952, when he promised that when the new rate was decided it would be made retrospective to January 1, 1952. In August, 1952, this promise was honoured, and rates were increased to 9s. per consultation and 11s. per domiciliary visit as from the beginning of the year.

The Council has been asked to agree to the extension of this service to include certain other pensioner groups in the community, but has stated that this would be unacceptable without reviewing the whole question of the concessional service already in existence, particularly because some of the proposed new beneficiaries under the scheme are not subject to a means test.

During the year a Pensioners' Medical Service Federal Committee of Inquiry and various Pensioners' Medical Service State Committees of Inquiry have been set up by the Minister. In accordance with the latter's request a panel of names was submitted by the Council of the Branch, and from it the following were appointed by the Minister to the South Australian Committee: Dr. G. L. Bennett, Dr. C. C. Jungfer, Dr. F. L. Wall and Dr. C. Yeatman, together with the Deputy Director of Health. The function of the State Committee of Inquiry is to inquire into and report to the Minister, or the Director-General of Health, on any matter referred to the committee by the Minister himself, or by the Director-General, in respect of or arising out of the provision of medical services, medicines and other benefits to pensioners and their dependants under the National Health (Medical Services to Pensioners) Regulations or the National Health (Medicines for Pensioners) Regulations.

It is specifically provided that an action or proceeding, civil or criminal, shall not lie against a member of such a committee for or in respect of an act or thing done or report made in good faith by such member. This means in effect that members of these Committees of Inquiry have been given immunity from legal action in matters raised by the inquiry, a policy strongly advocated by both Federal and State Councils.

It is to be noted that these committees are largely composed of nominees of our Association so that a reasonable interpretation of the Act, having regard to traditional medical practice, may be expected.

Disclosure of Medical Information to Members of Friendly Societies.

Soon after the commencement of the new system of medical benefits for members of friendly societies, it was claimed by the United Friendly Societies Council that great difficulty was being experienced by them in obtaining the information necessary for assessment of the correct amount of refund to their members. The Council was informed that many members of the profession were unwilling to supply the desired information since it was considered that to do so would involve a breach of professional confidence on the part of the doctor concerned.

Early in December, however, following a conference with representatives of the United Friendly Societies Council of South Australia, it was decided to ask medical practitioners, upon the request of the patient, to indicate either on a claim form, ordinary private account or receipt, the service that had been rendered by them by using one of the following undermentioned terms:

1. Sickness. (Including number of visits by calendar month and showing actual date of the first service rendered to each patient.)
2. Accident. (Including number of visits by calendar month and showing actual date of the first service rendered to each patient.)
3. Midwifery.
4. Operative procedures. (Including number of visits by calendar month and showing actual date of the first service rendered to each patient.)
5. Anæsthetics.
6. Diagnosis services, for example, X ray, pathology, biochemistry, cardiograms.
7. Injections for immunization and desensitization.

It was stressed that it was not compulsory for the doctor to write the precise nature of the service given, members being merely asked to indicate verbally to the patient the general nature of the service given so that either the nurse, or the patient himself, could endorse the claim form, account or receipt with the appropriate information. In this way the detail given to the friendly society secretary is sufficient to enable him to compute the benefit payable.

This system of endorsing accounts in this way has, it is believed, been universally adopted by members of the medical profession rendering services to members of friendly societies.

Fees Payable to Local Medical Officers.

After very strong representations had been made to the Minister for Repatriation by the Federal Council, the fee payable to local medical officers by the Department of Repatriation for services rendered to eligible ex-service personnel was increased to 12s. 6d. per visit as from January 1, 1953.

Fees for Life Assurance Examinations.

In accordance with an agreement recently arrived at between the Federal Council and the Life Offices' Association, the fee for the medical examination of candidates for life assurance will be increased to two guineas as from July 1, 1953, on the understanding that all personal statements of proponents or policies will be completed in the presence of the medical examiner at the time of the examination.

Branch Handbook.

Five meetings of the Editorial (Handbook) Subcommittee have been held throughout the year and considerable progress in regard to the information which is to be included in the Branch Handbook has been made.

Home for the Branch.

The Council feels that members will be very gratified to know that the British Medical Hall Company has now obtained vacant possession of the residence situated at 80 Brougham Place, North Adelaide, and that final plans for the conversion of the property into several professional suites and office accommodation for the Branch have been drawn up. Plans have also been put in hand for the erection of a lecture theatre and a new five-storied building on the western side of the property, and members will later be asked to assist the undertaking financially. In the meantime, conversion of the property into a permanent home for the Branch is being rapidly proceeded with, and it is anticipated that the premises will be occupied by the Branch within the next few months.

Medico-Pharmaceutical Liaison Committee.

A meeting of this committee was held on Thursday, May 14, 1953, the Branch representatives being Dr. Angove, Dr. Thorold Grant, Dr. Goode and Dr. Rieger.

Federal Council of the British Medical Association in Australia.

Meetings of the Federal Council throughout the period under review took place in Melbourne on August 21, 1952, and in Sydney on February 23, 1953. A report on the proceedings of the August meeting was published in THE MEDICAL JOURNAL OF AUSTRALIA of September 27, 1952, and that of the February meeting appeared in the issue of April 18, 1953.

The Branch Council was represented at these meetings by Dr. L. R. Mallen and Dr. C. O. F. Rieger.

World Medical Association.

Dr. L. R. Mallen, who is a member of the Council of the World Medical Association, represented the Australian profession at meetings held at Brussels in October, 1952, and at Lisbon in March, 1953.

Visit of Mr. E. A. Van Steenwyk.

Mr. van Steenwyk, who is a recognized expert on the operation of voluntary health insurance schemes in the United States of America, and who, in company with Mr. McNary, visited Australia at the invitation of the Federal Government, came to Adelaide on April 28, 1953, in order to meet bodies interested in the question of voluntary health insurance in its bearing on the new *National Health Service Act*. Although it was not practicable to call a special general meeting of members in order to meet him, the Council entertained him at a dinner to which honorary secretaries of all local associations and metropolitan general practitioner groups were invited, at the conclusion of which he gave a short address and answered several questions regarding the schemes in force in the United States of America.

Memorial to the Late Sir Trent Champion de Crespigny.

At a meeting of the Branch Council, held on February 5, 1953, it was decided to institute a memorial to the late Sir Trent Champion de Crespigny in the form of a memorial library of medical books of historic interest to be housed in the office of the Branch on the establishment of a permanent home.

The fund is still open for the receipt of subscriptions for the purchase of books, and donations of old medical books will also be gratefully received.

Completion of Fifty Years' Membership.

Sir George Wilson completed 50 years' continuous membership of the Association throughout the year, and became an honorary life member as from January 1, 1953. The Council desires to congratulate Sir George upon his distinction.

Frank S. Hone Clinical Prize.

The Frank S. Hone Memorial Prize of £15 15s., which was awarded for the first time at the final examinations held in December, 1952, was won by Dr. P. M. Last.

Honours and Awards.

The Council extends its congratulations to Sir Edmund Britten Jones on the award of Knighthood; to Dr. Gilbert Brown, who has been made a Commander of the Most Excellent Order of the British Empire; to Dr. J. M. Dwyer on his appointment as Honorary Surgeon to His Excellency the Governor-General of Australia; also to Lieutenant-Colonel E. A. H. Russell, O.B.E., V.D., M.B., B.S., who has been promoted to Knight of Grace, and to Dr. H. H. Hurst, who has been promoted to the grade of Officer in the Venerable Order of St. John of Jerusalem.

Secretariat.

The Council wishes to record its satisfaction at the work of the Secretary and Assistant Secretary. Both have carried

---

SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION (INCORPORATED).

Income and Expenditure Account for the Year Ended December 31, 1952.

	1951. £ s. d.	1952. £ s. d.
To Staff Salaries and Superannuation	1,334 16 10	1,644 7 6
„ Postages	123 7 10	164 5 7
„ Stationery and Printing	175 16 4	198 13 11
„ Telephone and Telegrams	35 5 2	22 8 0
„ Rent	73 17 7	86 10 0
„ Legal Expenses	14 14 0	25 4 0
„ Audit and Accountancy	10 10 0	26 5 0
„ General Expenses	203 6 4	234 3 11
„ Entertainment	—	77 1 5
„ Depreciation, Furniture, *et cetera*	31 9 0	32 15 0
„ Net Surplus for Year	—	727 4 5
„ Deficit, 1951 £25 2 8		
	£3,238 18 9	

	1951. £ s. d.	1952. £ s. d.	£ s. d.
By Gross Subscriptions			5,761 18 3
City	3,127 5 3	4,275 18 6	
Country	1,082 15 3	1,391 5 0	
Students	66 19 6	94 14 9	
Less Deductions from Subscriptions			2,579 14 7
B.M.A., London	848 0 0	922 14 1	
M. J. AUST.	495 17 6	531 17 6	
Federal Council Capitation Fee	636 6 0	675 3 0	
Library Grant	386 13 6	450 0 0	
„ Net Subscriptions			3,182 3 8
„ Interest	53 10 5	54 12 7	
„ Medical Certificate Books	4 7 0	2 2 6	
			56 15 1
			£3,238 18 9

SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION (INCORPORATED).

Balance Sheet as at December 31, 1952.

LIABILITIES.	£ s. d.	£ s. d.	£ s. d.
Special Funds—			
Listerian Oration Fund:			
Balance, January 1, 1952	414 19 9		
Net Income for year	12 11 8	427 11 5	
Frank S. Hone Memorial Fund:			
Donations Received	659 6 0		
Net Income to Date	5 9 0	664 15 0	
British Medical Hall Building Fund:			
Balance, January 1, 1952	884 16 7		
Interest and Dividends	101 12 6		
Special Appropriation	400 0 0	1,386 9 1	2,478 15 6
Sundry Creditors			55 12 6
General Fund:			
Balance, January 1, 1952		4,549 7 8	
Add Net Surplus for Year		727 4 5	5,276 12 1
			£7,811 0 1

ASSETS.	£ s. d.	£ s. d.	£ s. d.
Special Fund Investments—			
Listerian Oration:			
Electricity Trust Debentures—			
£140, 4% "M", 1957	140 0 0		
£150, 4½% "Q", 1962	150 0 0		
£20, 4½% "M", 1953	20 0 0		
Savings Bank of South Australia	117 11 5	427 11 5	
Frank S. Hone Memorial Fund:			
£50, 3½%, 1959 Commonwealth Bond	50 0 0		
£300, 4½%, 1962 South Australian Gas Debentures	300 0 0		
£250, 4% "M", 1957 Electricity Trust Debentures	250 0 0		
Savings Bank of South Australia	64 15 0	664 15 0	
British Medical Hall Building Fund:			
£200, 3½% Commonwealth 1960 Bonds	200 0 0		
Savings Bank of South Australia	1,085 14 1		
National Bank Current Account	100 15 0	1,386 9 1	2,478 15 6
Fixed Assets—			
Furniture and Plant (at cost, *less* depreciation)		286 13 5	
Delineascope and Projector (at cost, *less* depreciation)		8 2 0	
Lister Medals and Dies (at cost, *less* depreciation)		2 0 0	296 15 5
Current Assets—			
Investments:			
British Medical Hall Company, Limited, Shares—			
170 Preference, 134 Ordinary (at cost)	3,074 10 0		
Australasian Medical Publishing Company, Limited—			
5% Debentures (at cost)	30 0 0		
3½% Debentures (at cost)	1,200 0 0		
Advance not yet Converted	38 8 1	4,342 18 1	
Stocks on Hand		36 13 6	
Sundry Debtors		193 11 7	
Savings Bank Library		1 16 6	
Commonwealth Savings Bank	78 2 7		
Savings Bank, General Account	282 4 6		
National Bank, General Account	94 7 7		
Cash on Hand	5 14 10	462 6 0	5,035 9 2
			£7,811 0 1

F. C. W. DOBBIE, Secretary.

F. L. WALL, Honorary Treasurer.

AUDITORS' REPORT.

We hereby report that we have examined the Books and Accounts of the South Australian Branch of the British Medical Association, Incorporated, for the year ended December 31, 1952. In our opinion the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the affairs of the Branch as at the above date according to the best of our information, the explanations given to us, and as shown by the books produced.

Adelaide, June 4, 1953.

ANNELLS, TILLEY, HUNWICK AND COMPANY,
Chartered Accountants (Aust.).

out their duties with unflagging interest and courtesy, and the affairs of our Branch have been conducted smoothly in consequence.

(Signed) B. S. HANSON,
President.

FINANCIAL STATEMENT.

The financial statement, which is printed herewith, was adopted on the motion of Dr. F. L. Wall, seconded by Dr. C. O. F. Rieger.

ELECTION OF OFFICE-BEARERS.

Dr. B. S. Hanson said that in the absence of further nomination he declared Dr. Sholto J. Douglas elected President of the Branch for the ensuing twelve months. He invested Dr. Douglas with the badge of office and inducted him to the chair. Dr. Douglas thanked the members for his election.

Dr. S. J. Douglas said that the following had been elected office-bearers for the ensuing year:

Vice-President: Dr. Ivan B. Jose.

Honorary Treasurer: Dr. F. L. Wall.

Honorary Medical Secretary: Dr. R. Angove.

Members of Council: Group A—Dr. O. W. Bowering, Dr. A. S. de B. Cocks, Dr. D. G. McKay. Group B—Dr. J. R. Coates.

Mr. H. P. Tilley was appointed auditor for the ensuing year.

THE RETIRING MEMBERS OF COUNCIL.

On the motion of Dr. I. B. Jose, seconded by Dr. J. Hamilton, a motion of thanks was carried to the retiring members of the Council: Dr. R. T. Grant, Dr. J. D. Fotheringham, Dr. H. A. Goode, Dr. R. H. von der Borch and Dr. A. G. Rowe.

RETIRING PRESIDENT'S ADDRESS.

Dr. B. S. Hanson then read his retiring president's address (see page 321).

Dr. L. L. Davey proposed and Dr. W. M. Irwin seconded a vote of thanks to Dr. Hanson for his address. The vote was carried by acclamation and Dr. Hanson replied.

VICTORIAN BRANCH NEWS.

Section of Preventive Medicine.

THE next meeting of the Section of Preventive Medicine of the Victorian Branch of the British Medical Association will be held in the Medical Society Hall, 426 Albert Street, East Melbourne, on Thursday, September 10, 1953, at 4.30 p.m. Dr. K. Gardner Kerr, Tuberculosis Officer of the Department of Health, will give an address entitled "Pulmonary Tuberculosis: The Changing Scene in Bendigo". All members of the Branch are invited to be present.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

MEDICAL "SPIRITUALISM": THE FASHIONABLE HUMBUG OF THE DAY.[1]

[*The Australian Medical Gazette*, December, 1871.]

MEDICAL "Spiritualism" or the diagnosis and treatment of disease by the aid of a spiritual medium, either masculine or feminine, is decidedly looking up. At least two prominent members of the profession in this city, exclusive of a number of small fry, are known to have given in their adhesion to this, the latest and most transparent of shows—the offspring of mental imbecility and cerebral softening. One hospital physician, connected with the Melbourne University, is said to have habitual recourse to the "Spiritual" services of an ex-grocer, now carrying on the business of medical "medium" and bibliopolist. The protégé of this hospital physician and university magnate is at the present moment advertising the following nostrum: "Spiritus Vitæ—Terry's Ethereal Medical Restorative Medium and Health-producing Regenerator." Were it not perhaps *infra dig* for one occupying the important and responsible position of medical "Spiritualist" Mr. Terry might have announced his nostrum as being "under the patronage of the faculty". This ex-grocer, Spiritual diagnostician, and therapeutist, claims to be able, by the aid of a lock of hair, piece of garter, or other adjunct of a sick person, without seeing the latter, to prescribe successfully for the most obscure and dangerous diseases. Another hospital physician, also connected with the Melbourne University, with better taste or more gallantry prefers a feminine "medium" possessed of the additional advantages of youth and good looks. This appears to us the most agreeable way of conducting the business. We believe it is nothing unusual to see the equipages of a number of medical men draw up of a morning before the place of business of a well-known and popular medical "medium" while the owners are inside consulting the great "Spiritist" respecting the treatment and fate of their unfortunate patients. Seriously, we ask what is the profession coming to in this colony? Where is this demoralizing humbug to end? Melbourne presents the strange spectacle of hospital physicians filling the responsible positions of examiners and lecturers in the local university who are doing their utmost to degrade medical science to the level of "Spiritism". The thing appears so preposterous that it will scarcely be believed by the profession in England. Had a few obscure medical men given in their adhesion to the contemptible delusion of medical "mediumship" it would be sufficiently discreditable. What language is strong enough adequately to stigmatize such conduct on the part of learned (?) physicians holding high office in the Melbourne University and the metropolitan hospitals.

Not long since, the name of a licentiate of the London College of Physicians, resident in this city, was struck off the roll of that College for advertising his services in the public Press, an offence infinitely less serious than the disgraceful conduct on which we have felt it our duty to animadvert. The University of Melbourne is peculiarly unfortunate in its office bearers: this not being the first time that that institution has been dragged through the mire by its medical protégés.

[1] From the original in the Mitchell Library, Sydney.

Correspondence.

FLUORINE AND DENTAL CARIES.

SIR: In a paper entitled "Fluorine and Dental Caries", by A. P. B. Amies and P. Pincus (M. J. AUSTRALIA, July 11, 1953, page 41), one intention of the authors is to discuss the alleged disadvantages of fluoridation set out by N. E. Goldsworthy (M. J. AUSTRALIA, February 28, 1953, page 251), in the hope that such a discussion may resolve doubts in the minds of some members of the medical and dental professions in Australia as to the advisability or otherwise of artificial fluoridation. However, careful examination of the article does not appear to justify the authors' optimism, but would rather raise more doubts in the minds of those seeking information on the subject, for they have not shown Goldsworthy's alleged disadvantages to fluoridation to have any real significance.

While it is not possible to criticize the paper in detail in this letter, several observations must be made to indicate the main errors.

It would appear from Amies and Pincus's paper that fluoride only exerts a temporary inhibition of dental caries, and that the toxic effects of fluoride are so serious as to make artificial fluoridation detrimental to the public health.

Scientific evidence can be readily produced to show that (*a*) the inhibitory effect of fluoride carries through adulthood (Russell and Elvove, *Pub. Health Rep.*, October, 1951, page 1389; Forrest *et alii*, *M. Bull. Min. Health*, May 10, 1951, page 104), and that (*b*) although cumulative storage of fluoride in the skeleton is a well-known effect, the critical factor in producing chronic fluoride intoxication is the amount of fluoride ingested and the length of time of the exposure. Robinson (*New York State Dental J.*, February, 1952, page 70, a reference which Amies and Pincus use to support their argument [*sic*]) states that over 20 milligrammes of fluoride must be ingested daily for ten or

twenty years to cause chronic skeletal defects, while Brun, Buchwald and Roholm (*Bull. Hyg.*, 1944, 19: 532) state that 25 milligrammes of fluoride must be retained in the skeleton per day to cause osteosclerosis, their observation based on fluoride poisoning in cryolite workers, which form of fluoride intake lends itself to more accurate estimation than water-borne fluoride. It appears obvious that there is not the remotest chance that the use of low fluoride water (1·0 part per million) could ever result in an intake of fluoride approaching those levels necessary for chronic intoxication.

Much more conclusive, however, is the statement of the British Government White Paper, issued in the beginning of July this year, which recommended fluoridation for England (*Am. Dent. Assoc. Newsletter*, July 15, 1953, page 2). This recommendation is the result of the investigation of the British Mission to the United States of America to study fluoridation. The report declared fluoridation to be beneficial in reducing dental decay and "the evidence of harmlessness to be so strong as to be almost conclusive". In view of these facts it is difficult to see how Amies and Pincus can justify their assertions that Weaver's work in England is a "whole stage ahead of the Americans".

No comment would be complete, however, without reference to the hypothesis that the fluoride mechanism in caries prevention may operate "by inhibition of bacterial growth in the water of reservoirs used for domestic supplies". This hypothesis ignores the vast amount of chemical and biochemical evidence of the fluoride caries mechanism (McClure, F. J., *Ann. Rev. Biochem.*, 1949, 18: 336): (*a*) that dental tissues contain fluoride which may be acquired either during formation or after eruption, or absorbed onto the surface of the enamel; (*b*) that fluorine will prevent induced experimental dental decay in animals when administered in a variety of ways; (*c*) that fluorine reduces the acid solubility of the enamel and brings about other surface changes; (*d*) that fluorosed enamel exerts an antibacterial effect and an antienzymatic effect; (*e*) that oral bacterial activity is also reduced in persons in fluoride areas.

The comment of the editorial (*J. Am. Dent. Assoc.*, May, 1953, page 576) on the evidence favouring fluoridation indicates increasing and unanimous scientific foundation of the use of fluoridation for the safe, efficacious, economical and practical partial control of dental caries: "Thus the scientific evidence mounts monthly in favour of fluoridation leaving opponents of the process only vapid arguments based either on emotionalism or misinformation."

Yours, etc.,

NOEL D. MARTIN,
Senior Lecturer in Preventive Dentistry, University of Sydney.

Dental Hospital,
Chalmers Street,
Sydney.
July 31, 1953.

THE LIFE INSURANCE MEDICAL RESEARCH FUND OF AUSTRALIA AND NEW ZEALAND.

SIR: The Life Insurance Medical Research Fund of Australia and New Zealand, established at the end of last year, is about to announce the first of its yearly awards, those for 1953, totalling approximately £26,000. These awards comprise four grants-in-aid to various research departments throughout Australia and New Zealand and three Fellowships.

Details of the grants-in-aid are as follows:

The Hallstrom Institute of Cardiology, Royal Prince Alfred Hospital, Sydney—for a two-year research programme, under the direction of Dr. B. Sinclair-Smith, Senior Research Fellow of the Institute, into the correlation between the pulmonary insufficiency and pathological lung changes seen in patients with mitral stenosis.

The Department of Medicine, University of Otago, New Zealand—for research, under the direction of Dr. F. H. Smirk, Professor of Medicine at the University, concerning the causes of high blood pressure in man.

The Baker Medical Research Institute, The Alfred Hospital, Melbourne—for research, under the supervision of Dr. T. E. Lowe, Director of the Institute, into the mechanical and electrical energy production of an intact heart under varying circulatory conditions with a view to elucidating the changes, physico-chemical or metabolic, that lead to myocardial failure.

The Department of Physiology, University of Western Australia—for a two-year research programme, under the direction of Dr. N. D. Crosby, Reader in Physiology at the University, into the mechanism of the production of œdema in congestive cardiac failure.

The following Fellowships were awarded:

A senior Fellowship, tenable for three years, to Dr. F. B. Byrom, M.D., F.R.C.P., F.R.A.C.P., of Saint Vincent's Hospital, Sydney, for research in hypertension and toxæmia of pregnancy.

A travelling Fellowship to Dr. P. I. Korner, M.Sc., M.B., B.S., of The Kanematsu Institute, Sydney Hospital. This Fellowship will permit Dr. Korner to undertake further work on the subject of changes in the blood volume in the lungs of patients with essential hypertension and associated problems. During the first two years of the Fellowship Dr. Korner will work at the Postgraduate Medical School, Hammersmith, London, under Professor J. McMichael; during the third year of his Fellowship Dr. Korner will continue his work in a research institute in Australia.

A research Fellowship to Dr. J. R. E. Fraser, M.B., B.S., of Melbourne. Dr. Fraser will undertake research in electrocardiography at the Baker Medical Research Institute, Melbourne, under the supervision of Dr. T. E. Lowe, Director of the Institute.

Yours, etc.,

N. H. TAYLER,
Secretary, The Life Insurance Medical Research Fund of Australia and New Zealand.

13 Bond Street,
Sydney,
July 28, 1953.

THYROIDECTOMY FOLLOW-UP.

SIR: I trust that Dr. Tofler's interesting article in the journal recently will be read as a criticism of the criteria for selection of the patients submitted to thyroidectomy and not as an indictment of the operation itself. When the operation is done for symptoms which are not due to thyroid disease it is not surprising that it should be unsuccessful, and I realize that this was the moral which Dr. Tofler wished to point.

However, I cannot agree that it is difficult to differentiate hyperthyroidism from anxiety states providing an adequate clinical appraisement is made. There are many points of difference, probably the most important being the condition of the skin vessels, vasoconstriction being associated with anxiety states—the cold sweating palms, for example—while hyperthyroidism produces dilatation. And I would stress the fact that an adequate assessment of any patient with suspected thyroid abnormality involves an examination, and if necessary reexamination on one or more occasions, by both a surgeon and a physician working as a team, as well as the use of the routine tests, which are the least important part of the procedure.

With recent advances in therapy, it is extremely important that each patient should be thoroughly assessed individually and that the indication for operation, thiouracil, radioactive iodine or masterly inactivity be carefully considered. No rule of thumb regarding suitability for thyroidectomy will ever give worthwhile results, and particularly not the approach which concentrates on the gland and neglects the patient as a whole.

Yours, etc.,

W. A. SELDON.

149 Macquarie Street,
Sydney,
August 10, 1953.

BILATERAL CARCINOMA OF THE BREAST.

SIR: The interesting communication by J. M. Yeates (M. J. AUSTRALIA, July 11, 1953) on bilateral carcinoma of the breast raises three very important, although debatable, points. Firstly, what is the basis for the diagnosis of true independent bilateral breast carcinoma? Secondly, what is the treatment for carcinoma appearing in the opposite breast after radical treatment of breast carcinoma? Thirdly, what are the indications, if any, for prophylactic removal of the opposite breast in such a case?

With regard to the criteria for the diagnosis of multiple primary cancer, Billroth in 1869 (quoted by Hanlon, 1931) postulated that: (*a*) each must arise in a different organ:

(*b*) each must demonstrate a different cell type; (*c*) each must produce its own metastases.

These criteria are obviously too rigid, and Warren and Gates (1932) modified them as follows: (*a*) each must present a definite picture of malignancy; (*b*) each tumour must be distinct; (*c*) exclusion of one being a metastasis must be certain. To this Tullis (1942) added that each lesion must have a typical histology for malignancy in the organ involved.

As far as the breast is concerned, the high incidence of bilateral breast carcinoma in the literature (9% quoted by Hubbard, but nearer 1% to 2% in most other series) is, in the vast majority of cases, associated with other signs of lymphatic or distant spread. Kilgore (1921), in order to exclude, as far as possible, the likelihood of the second growth being a metastasis, postulated certain criteria for true bilateral primary breast cancer: (*a*) a long interval (over five years) between mastectomy and the development of growth in the opposite breast; or (*b*) long-term cure after mastectomy of the second breast (because if this were metastatic, other metastases would tend to show themselves). To be added to these is, of course, (*c*) difference in histological type between the two breast cancers.

These long-term intervals postulated by Kilgore are in direct contrast to the statement of Williams (1910) quoted by J. M. Yeates: "In malignant disease of the breast, we can seldom be sure of the bilateral origin of the affection unless the malady begins at about the same time in each organ." One's clinical experience would support the long-spaced incidence, suggested by Kilgore, as being more significant. Coincidental bilateral breast carcinoma is so often associated with a rapidly growing tumour and the presence of other metastases.

The problem of treatment for carcinoma appearing in the second breast is therefore one dependent on the interpretation of the ætiology of this second growth. If fulfilling Kilgore's criteria, the treatment must be radical, and will involve radical mastectomy. If not, however, fulfilling these criteria, it must be regarded as metastatic in nature. Its most likely path of spread is through the lymphatics across the mid-line, and any attempt at surgery on the second breast is fraught with the danger of widespread dissemination due to loaded lymphatics being opened. This is seen in the case reported by J. M. Yeates and in the majority of cases seen in clinical practice which are so treated. The statement of the latter author, "In appropriate cases, radical removal of the opposite breast is sound practice", is not intended, I am sure, to be construed as condoning this practice. Treatment of the second breast in these cases is, logically, by irradiation (Stoll, 1952). Such radiotherapy is incapable of rendering the growth operable, because of the very nature of its origin.

With regard to the indications for prophylactic mastectomy. Kilgore (1921), in following up 659 cases of breast cancer, shows that the expectancy of cancer of the second breast, in women surviving over five years after mastectomy, is 7% to 10%, and the expectancy of breast cancer in the average population only 1·7% to 2%. Although the yardstick of five years' survival can only be an approximation, it is still likely that the chance of a second independent breast cancer is higher than in the average population. In this respect, I would quote Willis (1948): "Carcinoma supervening on hyperplasia is often multicentric or diffuse in origin arising from extensive reaches of one or more ducts or even from the entire breast. Sometimes such tumours are bilateral, and should a middle-aged woman with cystic hyperplasia of both breasts develop carcinoma in one, the risk of carcinoma supervening in the other also is great enough to justify local mastectomy of the second organ." His cases, V, VI and VII, illustrate the development of bilateral breast carcinoma in breasts showing generalized cystic hyperplasia. I would therefore add to Kilgore's criteria: (*d*) the existence of cystic hyperplasia in both breasts.

I would respectfully suggest this criterion alone as justifying routine prophylactic removal of the opposite breast. The high proportion of metastases in the second breast recorded in the literature does not, in my humble opinion, justify an unnecessary and dangerous operation.

Yours, etc.,

Prince Henry's Hospital, Melbourne,
July 14, 1953.

BASIL A. STOLL.

References.

HANLON, F. R. (1931), "Multiple Primary Carcinomas", *Am. J. Cancer* (supplement), 15: 2001.

KILGORE, A. R. (1921), "The Incidence of Cancer in the Second Breast after Radical Removal of One Breast for Cancer", *J.A.M.A.*, 77: 454.

STOLL, B. A. (1952), "X Rays and Radium Therapy for Students", Lewis, 50.

TULLIS, J. L. (1942), "Multiple Primary Malignant Lesions", *J. Lab. & Clin. Med.*, 27: 588.

WILLIS, R. A. (1948), "Pathology of Tumours", Butterworth, 231.

URINARY EXCRETION OF MERCURY IN PINK DISEASE.

SIR: I have read with interest Dr. F. W. Clements's report on "Urinary Excretion of Mercury in Pink Disease" in the journal of August 8.

Although the author does not commit himself, his findings seem to confirm that chronic mercury poisoning is a probable ætiological factor in pink disease.

I had a very large general practice for ten years in a suburb of Vienna, and in that time never saw a single case of pink disease nor heard that any of my colleagues had treated one, nor did I see one during the eight months I attended the out-patient department and wards in one of the biggest children's hospitals of Vienna.

In Austria the popular method of treating the disturbances connected with teething is to administer camomile or fennel tea. To my knowledge teething powders were not used, and also calomel was rarely used in pædiatric practice. This may account for the absence, or rarity, of pink disease in that country.

Yours, etc.,

Laurieton,
New South Wales,
August 14, 1953.

E. CHAMBERS.

ACUTE INFECTIONS OF THE FINGERS AND HAND.

SIR: May I comment on the valuable paper, "Acute Infections of the Fingers and Hand", by T. J. Claffey and N. C. Newton, in your issue of August 1? This is a most significant paper, more perhaps on account of some general implications than for its details.

In summary the writers state "previous misconceptions are corrected". Anyone who has seen something of major hand sepsis before the advent of antibiotics must know that the conditions seen and described by the writers (who have only three cases of tenosynovitis and one of midpalmar space infection in their case series) run a course very different to those for which Kanavel elaborated his teaching. Anyone unfamiliar with these bygone common clinical entities might be led to infer that Kanavel and the many thousands who have followed his teaching must all be fools. The paper infers faults of past teaching, but is it not the different and essentially localizing course of common hand infections under present-day treatment which calls for less radical operations? We can now afford to be more conservative. It is easy to look askance nowadays at a stiff finger or see some unideal and contracted incision scar quite out of perspective to an ugly septic ballooned hand, with rapidly spreading cellulitis, lymphangitis, adenitis, or even septicæmia and a life in jeopardy. It is the changing face of surgery which makes necessary the equally changing face of its teaching. Kanavel's teaching was good in his day—as that of the writers is good today. Surgery is not static, and older methods may no longer be necessary or wise, but they should not be regarded as previous "misconceptions". If there is any misconception it is surely rather in their present-day misapplication. No doubt, much of present-day correct teaching will also soon be outmoded.

My main purpose, however, is to comment on the background on which this excellent paper is obviously based. It indicates the wisdom of some degree of case segregation in the larger hospitals. We hear widespread comment and reaction voiced to the principle of case segregation and to the setting up of any special clinic, that it is contrary to the best interests of training and therefore ultimately of practice. This natural reaction is responsible for distorted or rationalizing arguments and a failure to accept the great advantages to be obtained by case segregation. If work is well done in an institution it follows that students will be well taught by men who know what they are talking about. It is the best safeguard against inadequacies of merely passing on the routines of our own teaching as the writers

of this paper well demonstrate. What is of more importance, however, is that patients are better treated, for today organization is the keynote of so many aspects of surgical practice.

It is perhaps a stigma that there should be need of any special organization for the management of hand infections, and I feel that the writers of this admirable article might have followed up their passing comment under heading pathology, that infection as a rule follows "some break in the continuity of the skin". If people are cognizant of the proper home care of trivial hand injuries, and if the standard and respect for treating all hand injuries is raised in hospitals, there would be no need for any clinics for treating "hand infections" in particular. This has been well shown in the home school of Kanavel himself, where Somner Koch and Michael Mason rarely see a case of major hand infection to show their students. This is attributed, not only to antibiotics, but also to the standard of regard for and treatment of minor hand injuries by the public, the medical fraternity and industrial authorities which has been raised to such a level. Indeed, I think the main deduction from Claffey and Newton's paper is yet another indication here in Australia for a hand injury clinic in all larger hospital centres. It might well form part of the organization of a more comprehensive accident service. It is a paradox that these only exist in some of our less populous States.

Yours, etc.,

59 Collins Street,
Melbourne, C.1,
August 12, 1953.

B. K. RANK.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Week-End Course at Kempsey.

THE Post-Graduate Committee in Medicine in the University of Sydney, in conjunction with the Eastern District Medical Association, will hold a week-end course at Kempsey on Saturday and Sunday, September 5 and 6, 1953, in the lounge room of the Nurses' Home, Macleay District Hospital, Kempsey. The programme is as follows:

Saturday, September 5: 2.15 p.m., registration; 2.30 p.m., "Surgical Aspects of Peptic Ulceration", Dr. Eric H. Goulston; 4.15 p.m., "Medical Aspects of Peptic Ulceration", Dr. Innes A. Brodziak.

Sunday, September 6: 9 a.m., annual general meeting of the Eastern District Medical Association; 11.30 a.m., "Intestinal Obstruction in Infancy", Dr. Eric H. Goulston; 2 p.m., "Clinical Problems in Hypertension", Dr. Innes A. Brodziak.

The fee for attendance at the course will be £3 3s. Those wishing to attend are requested to notify Dr. Angus McNeil, Honorary Secretary, Eastern District Medical Association, 89 River Street, West Kempsey, particularly mentioning whether hotel accommodation is required. Members are asked to note that the annual subscription to the Eastern District Medical Association (£1 1s.) is now due.

Reopening of Film Lending Service.

The Post-Graduate Committee in Medicine in the University of Sydney announces that it has entered into arrangements with the New South Wales Film Council temporarily to house and handle its film collection. Intending borrowers from New South Wales and other States are asked to register with the Committee, after which they may apply direct to the New South Wales Film Council, 61 Hunter Street, Sydney. A minimum of ten days' notice is required by the Council, and borrowers must comply with the Council's rules and bear the cost of dispatch and return of all films.

The following films have been added to the Committee's film collection: "Anomalies of the Bile Ducts, Blood Vessels and Strictures of the Duct", "Prefrontal Lobotomy in Chronic Schizophrenia", "Diagnosis and Management of Acute Anterior Poliomyelitis", "Contraction of the Spleen", "Neuropsychiatry", "Student Nurse", "Accident Service", "Education of the Deaf", "Anæsthesia for Facial Surgery", "The Technique of Arch Wiring", "Bone Graft to Mandible", "The Treatment of Fibrous Non-Union by Bone Chips", "An Infected Fracture of the Left Angle", "Impression Technique for Fractured Jaws", "The Technique of Eyelet Wiring", "The Roger Anderson Pin Appliance", "The Roger Anderson Pin Technique", "The Control of an Edentulous Posterior Fragment by Surgical Wiring", "The Technique of Intermaxillary Fixation by Direct Wiring", "The Treatment of a Gunshot Wound of the Mandible with Extensive Loss of Bone", "The Technique Used in the Construction of Cast Metal Cap Splints", "The Treatment of a Gunshot Wound of the Mandible", "The Treatment of a Gunshot Wound of the Mandible and Maxilla", "Crush Fracture of the Middle Third of the Face", "Techniques in Plastic Surgery, Part I, Primary Repair and Secondary Suture", "Techniques in Plastic Surgery, Part II, Free Skin Grafts", "Techniques in Plastic Surgery, Part III, Local Flaps", "Techniques in Plastic Surgery, Part IV, Direct Flaps", "Techniques in Plastic Surgery, Part V, Tubed Pedicle Flaps", "Techniques in Plastic Surgery, Part VI, Chip Bone Grafting", "Disobliterating Endarteriectomy" (French and English sound tracks), "Endarteriectomy of the Bifurcation of the Abdominal Aorta and of the Iliacs" (French and English sound tracks), "Arterio-Phlebography in Free Circulation and in Series Timed by Chronograph" (French and English sound tracks), "Œsophageal Speech After Laryngectomy", "Chest Physiotherapy for Children", "Care of the Premature Baby".

Clinical Meeting at Balmoral Naval Hospital.

The Post-Graduate Committee in Medicine in the University of Sydney announces that Dr. Alan Sharp will give a lecture on "Advances in Cardio-Vascular Surgery" at 2 p.m. on Tuesday, September 15, 1953, at the Balmoral Naval Hospital, Balmoral. Clinical cases will be demonstrated after the lecture. All members of the medical profession are invited to attend.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 49, of August 13, 1953.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Appointment.—James Brotherton is appointed Surgeon Lieutenant (for Short Service), dated 18th April, 1953.

Extension of Retiring Age.—The retiring age of Surgeon Commander Charles Anthony Downward, D.S.C., is extended for a period of two years from 11th June, 1953.

AUSTRALIAN MILITARY FORCES.

Australian Regular Army.

Royal Australian Army Medical Corps.

To be Temporary Major, 7th May, 1953.—3/40053 Captain D. Headley.

2/40135 Honorary Captain J. V. C. Brassil is appointed from the Reserve of Officers, and to be Captain, 19th May, 1953, with a Short Service Commission for a period of one year.

Regular Army Special Reserve.

Royal Australian Army Medical Corps.

VX700337 Honorary Captain J. K. Francis is appointed from the Reserve of Officers, and to be Captain and Temporary Major, 25th May, 1953.

VX700263 Captain (provisionally) G. R. G. Prendiville relinquishes the provisional rank of Captain and is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (3rd Military District) in the honorary rank of Captain, 12th March, 1952 (in lieu of the notification respecting this officer which appeared in Executive Minute No. 94 of 1953, promulgated in *Commonwealth Gazette* No. 37 of 1953).

Citizen Military Forces.

Northern Command: First Military District.

Royal Australian Army Medical Corps (Medical).—1/33072 Captain (provisionally) J. H. Grant relinquishes the provisional rank of Captain and is transferred to the Reserve

of Officers (Royal Australian Army Medical Corps (Medical)) (1st Military District) in the honorary rank of Captain, 20th May, 1953.

Eastern Command: Second Military District.

Royal Australian Army Medical Corps (Medical).—The provisional ranks of the following officers are confirmed: Captains 2/146561 K. J. Coventry, 2/146576 C. A. Rigg, and 2/127024 D. C. Maddison. The following officers are appointed from the Reserve of Officers, and to be Temporary Lieutenant-Colonels, 15th June, 1953: Majors 2/206952 J. Loewenthal and 2/206953 T. M. Greenaway.

To be Captain (Provisionally), 23rd March, 1953.—2/79109 Rene Lionel Manning, with regimental seniority next after 2/127024 Captain D. C. Maddison (in lieu of the notification respecting this officer which appeared in Executive Minute No. 75 of 1953, promulgated in *Commonwealth Gazette* No. 24 of 1953).

Southern Command: Third Military District.

Royal Australian Army Medical Corps (Medical).—3/101020 Captain (provisionally) D. N. Hawkins is seconded for post-graduate studies in United Kingdom, 30th March, 1953. The provisional rank of 3/123415 Captain T. J. Walsh is confirmed.

Reserve Citizen Military Forces.

Royal Australian Army Medical Corps.

1st Military District.—To be Captain, 19th June, 1953: Keith Stronach Mowatt. To be Honorary Captains: Neville Owen Denning, 29th May, 1953, James Peter Foley and Melville Chaloner Ferrier, 1st June, 1953, Richard Francis Drake, 12th June, 1953, Lawrence Septimus Parker, 19th June, 1953, and Lionel Efron, 26th June, 1953.

2nd Military District.—To be Honorary Captains: John Seymour Brooks, 12th June, 1953, and David Hugh Garrett, 24th June, 1953.

3rd Military District.—To be Honorary Captains: Kenneth Stewart Brearley, 1st May, 1953, Colin Blackwood Officer and Keith Anthony Grabau, 1st June, 1953, and Peter Murray Pearce, 24th May, 1953.

5th Military District.—To be Honorary Captain, 8th June, 1953: Arthur Keith Neate. The following officers are retired, 1st July, 1953: Honorary Captains B. J. Hallion, W. K. Peacock and H. R. Pearson.

The following officers are placed upon the Retired List (5th Military District) with permission to retain their rank and wear the prescribed uniform, 1st July, 1953:

5th Military District.—Colonel (Honorary Brigadier) G. B. G. Maitland, C.B.E., D.S.O., D.C.M., E.D., Lieutenant-Colonel C. E. A. Cook, C.B.E., Major L. M Corbett and Captain N. L. Cass.

The Royal Australasian College of Physicians.

THE Royal Australasian College of Physicians invites medical practitioners to submit applications for grants from the Research Fund of the College before September 15, 1953. Applications should be made on the prescribed form, which may be obtained from the Honorary Secretary of the College at 145 Macquarie Street, Sydney.

Royal Australasian College of Surgeons.

FINAL FELLOWSHIP EXAMINATION.

IN response to requests received, the Council of the Royal Australasian College of Surgeons has decided that a final examination for Fellowship of the College in general surgery only will be held in Melbourne, beginning on Thursday, December 10, 1953.

Candidates who desire to present themselves at this examination should apply, on the prescribed form, to the Censor-in-Chief for permission to do so on or before October

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED JULY 25, 1953.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	2(2)	1(1)	..	..	..	..	..	..	3
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	..	..	..	..	..	..	1	..	1
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	1(1)	..	..	..	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	1	..	..	..	..	..	..	..	1
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	1	..	14(12)	..	..	..	2	..	17
Diphtheria	9(8)	7(1)	11(1)	..	6(2)	..	..	..	33
Dysentery (Bacillary)	..	..	1(1)	2(1)	3(2)	4(3)	..	..	10
Encephalitis	..	..	..	..	..	..	..	..	..
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	1	..	..	1
Infective Hepatitis	..	4(2)	..	..	7(3)	..	..	..	11
Lead Poisoning	..	..	1	..	..	..	..	..	1
Leprosy	..	..	..	..	..	..	..	..	..
Leptospirosis	..	..	1	..	..	..	..	..	1
Malaria	..	1(1)	..	..	..	..	..	..	2
Meningococcal Infection	5(4)	1	..	..	..	1	..	..	7
Ophthalmia	..	..	..	..	5	..	..	..	5
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	10(7)	2	4(3)	4(3)	..	..	..	..	20
Puerperal Fever	..	..	..	..	..	..	..	..	..
Rubella	..	24(20)	..	..	48(46)	..	..	..	72
Salmonella Infection	..	..	..	..	..	..	..	..	..
Scarlet Fever	10(8)	62(32)	5(3)	2(1)	3(3)	2(2)	..	..	84
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	..	..	..	..	..
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	36(27)	40(24)	13(6)	13(8)	7(6)	6	..	..	115
Typhoid Fever	5	9(6)	2	..	..	..	..	2	18
Typhus (Flea-, Mite- and Tick-borne)	..	..	2	..	..	..	..	..	2
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

28, 1953. The appropriate forms are available from the Secretary, Royal Australasian College of Surgeons, Spring Street, Melbourne.

Candidates who have already been approved by the Censor-in-Chief, but who have not yet presented for examination, may present at this examination, provided they notify the Secretary of their intention to do so by October 28, 1953.

The examination fee is £21 *plus* exchange on cheques drawn on banks outside Melbourne, and must be paid to the Secretary by October 28, 1953.

Notice.

MARRIAGE GUIDANCE LECTURE IN SYDNEY.

ON Monday, September 7, W. L. Carrington, M.D. (Melbourne), will give a lecture in the Ferguson Hall (beneath St. Stephen's Church), Macquarie Street, Sydney. He is chairman of the Marriage Guidance Council of Victoria. Dr. Carrington's subject will be "The Social Biology of the Family". A film, "The Centre", depicting the famous Peckham Family Centre, will be screened. The meeting, which is organized by the Marriage Guidance Council of New South Wales, is open to the public, and will begin at 8 p.m. Members of the medical profession are specially invited to attend.

Deaths.

THE following deaths have been announced:

DUNSTAN.—Harold Frank Dunstan, on August 8, 1953, at Adelaide, South Australia.

ASHTON.—John Gerard Arthur Winter Ashton, on August 11, 1953, at Camberwell, Victoria.

BRENNAN.—Edward Thomas Brennan, on August 18, 1953, at Cronulla, New South Wales.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Byrne, John Justinian, M.B., B.S., 1950 (Univ. Sydney), 4 O'Brien's Road, Hurstville, New South Wales.

O'Dea, Bettine Frances, M.B., B.S., 1946 (Univ. Sydney), Princes Highway, Albion Park Rail, New South Wales.

The undermentioned have been elected as members of the New South Wales Branch of the British Medical Association: Kermode, Denis Graham, M.B., B.S., 1953 (Univ. Sydney); Mashford, Maurice Laurence, M.B., B.S., 1953 (Univ. Sydney); Savage, Hugh Edward, M.B., B.S., 1953 (Univ. Sydney); Summerhayes, Winston Joseph, M.B., B.S., 1953 (Univ. Sydney); Woods, Allan Thomas, M.B., B.S., 1953 (Univ. Sydney); Gray, Rex Justice John, M.B., B.S., 1951 (Univ. Sydney); James, Ronald William John Robinson, M.B., B.S., 1952 (Univ. Sydney); Bloch, Bernard, M.B., Ch.B., 1945 (Univ. Witwatersrand), F.R.C.S. (England), 1952; Killen, George Campbell, M.B., B.S., 1953 (Univ. Sydney); Lindsay, Norman Leslie, M.B., B.S., 1947 (Univ. Sydney); Soller, Karla, M.D., 1945 (Univ. Prague), registered in accordance with the *Medical Practitioners Act*, 1938-1950, Section 21A, for practice in the Sofala region.

Medical Appointments.

Dr. L. A. Cock has been appointed officer of health, Lameroo, South Australia.

Dr. D. D. Beard and Dr. J. L. Potts have been appointed surgical registrars at the Royal Adelaide Hospital in the Hospitals Department of South Australia.

Dr. B. H. Peterson has been appointed a Deputy Medical Superintendent in the Department of Public Health of New South Wales, Division of Mental Hygiene.

Dr. E. W. Abrahams has been appointed Director of Tuberculosis, Health and Medical Branch, Department of Health and Home Affairs, pursuant to the provisions of *The Public Service Acts, 1922 to 1950*, of Queensland.

The undermentioned have been appointed members of the New South Wales Medical Board for a period of seven years, subject to Section 7 of the *Medical Practitioners Act*, 1938-1950: Sir Hugh Poate, Sir Norman Gregg, Dr. J. R. Ryan, Dr. W. C. B. Harvey, Dr. H. R. R. Grieve, Dr. J. J. Witton Flynn, Dr. C. G. McDonald, Dr. C. J. M. Walters, Dr. W. D. K. Craig.

Diary for the Month.

SEPT. 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.

SEPT. 2.—Western Australian Branch, B.M.A.: Council Meeting.

SEPT. 8.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federal Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178 North Terrace, Adelaide): All Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205 Saint George's Terrace, Perth): Norseman Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rate is £5 *per annum* within Australia and the British Commonwealth of Nations, and £6 10s. *per annum* within America and foreign countries, payable in advance.